ESSENTIALS of GEOGRAPHY

BRIGHAM AND McFARLANE

FIRST BOOK

REVISED EDITION

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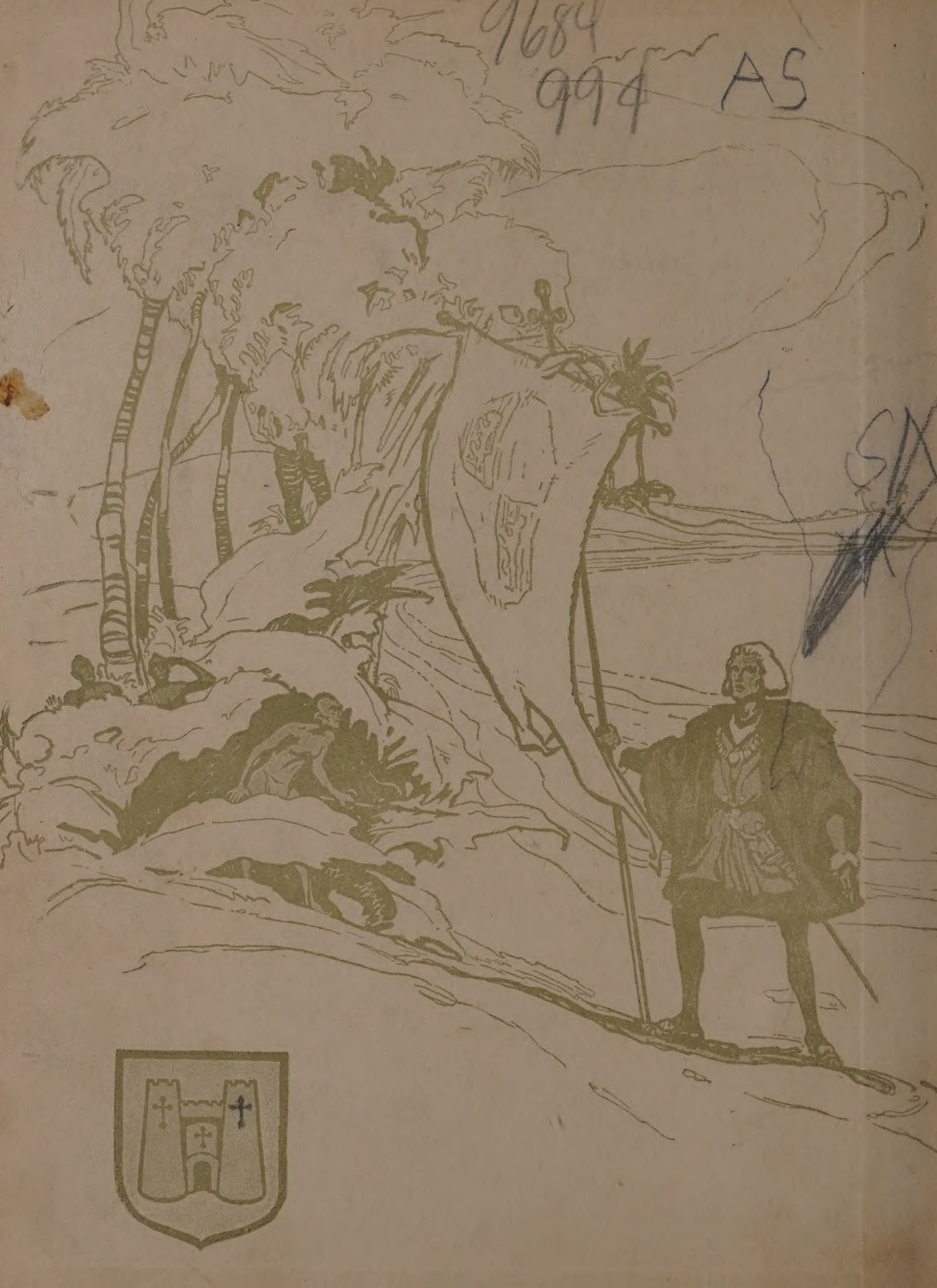

AWS

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Fresno Ohio

Route 5.

Arthur Schumacher

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Fig. 1. An ocean steamship in its dock. Some freight is unloaded directly on the wharf or pier, and some is transferred to lighters or barges

ESSENTIALS *of* GEOGRAPHY

FIRST BOOK

BY

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ESSENTIALS OF GEOGRAPHY, FIRST BOOK

E. P. 103

PREFACE

In an elementary textbook of geography, three things are of prime importance, — that the facts and principles selected shall be the essentials of our knowledge of the earth, that they be within the understanding of the young, and that they be set forth in an interesting manner.

To secure these ends a large section of this book is devoted at the outset to the ways of living and working, which differ in form but agree in principle among all men. This first section includes matter of the kind often called "home geography"; but that caption is not used here, because real home geography must be developed by the teacher, who can readily apply to any particular locality the principles unfolded on pages 1 to 54.

These first lessons of geography, telling how men work and live, are not only an essential part of the study, but they are designed to secure the pupil's interest in the lessons that follow. The child gains new appreciation of what he does and of what is being done around him when he learns that similar things are done in remote lands, and he takes in the facts of distant countries and of the earth as a whole because they appeal to his human interest.

In treating the earth as a whole (pages 55–69) the three aims above stated have been carefully kept in view. The conceptions of size and movement of the earth here involved are essential to the pupil's knowledge of geography. The facts of the earth's size, shape, and motions, and the subjects of direction, latitude, longitude, and seasons are presented in clear and simple statements and with ample illustrations. Unusual attention is also given to the meaning and use of maps.

Men are related to the earth and to each other largely through the products of the earth and their exchange. Both books of this series lay great emphasis upon production, manufacture, and trade. Not only in the introductory sections of the First Book, but also throughout the regional chapters, the subjects of agriculture, quarrying, mining, fishing, lumbering, manufacturing industries, transportation routes, and commercial exchanges receive much attention. Here again the facts and principles are essential, comprehensible, and interesting. The subject matter is carefully graded in reference to the fuller and more elaborate treatment in the Second Book of the series.

The derangement of industry caused by the recent war, great though it is, must be regarded as a temporary interruption of normal conditions. It is therefore thought best, in describing the industries of each country, to emphasize conditions as they are in normal times. The aim is to present matters of permanent importance rather than those of passing interest.

In the division of the United States into groups of states, the books conform to the arrangement of the United States Census. This grouping has the soundest geographical, economic, and historical basis; and is in harmony with current usage in newspapers and periodicals.

Since maps are among the vital materials of study, special attention has been given to this feature of the series. No effort has been spared to make the maps efficient in expression of land forms, accurate in detail, harmonious in color, clear and easily read.

The pictorial illustrations in both books of the series represent large collections of recent photographs from all parts of the world, and have been selected for their value as teaching material. Every picture has its definite purpose, which in nearly all cases is marked by a reference in the text. The colored views are not introduced as ornaments to the page; like the other pictures, they bear a close relation to the text. Color has been adopted only where it would especially contribute to vivid representation.

Obligations for assistance in providing illustrations and in perfecting the text are so numerous as to make personal mention impracticable. The authors are, however, especially grateful to those expert students and teachers of geography who have criticized the text in plan and detail, and who have in many cases been instrumental in securing a local accuracy and color which could not otherwise have been attained.

Albert Perry Brigham
Charles T. McFarlane

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Fig. 2. A farm where vegetables are raised. The men at the left are picking up the potatoes dug by the machine

HOW PEOPLE WORK AND LIVE

1. **The Study of Geography.**—This book tells about the earth on which we live. It tells many things about the land and water, but more about the people of the earth. In studying this book you will learn where people live and how they live. You will learn also about the things that men grow in the fields, dig from mines, catch in the water, or make in factories.

We have many kinds of food to eat, clothes to wear, and buildings in which to live and work. How do we come to have such things? It is because many people have worked to provide them.

Geography is the study of the earth, and of the way men work and live.

2. **The Work that People Do.**—Nearly every one does some kind of work. Farmers grow vegetables, fruit, and grain for food; and they raise cattle, hogs, sheep, and poultry. The cows give milk, the sheep furnish wool, the hens lay eggs, and the flesh of cattle, hogs, sheep, and poultry is used for food. Miners dig coal, iron, and other minerals from the earth. Workers in mills and factories make cloth, clothing, shoes, flour, machines, and many other useful things.

The farmer raises more vegetables than he can eat. The miner digs more coal than he needs to burn. The man who works in a factory helps to make more goods than all the factory hands together can use.

What becomes of the vegetables that the farmers do not eat, and of the coal that the miners do not burn? They are sold to people who do other kinds of work.

Most workers produce more than they can use. What they do not use is sold to other workers.

Fig. 3. Factories where many people work

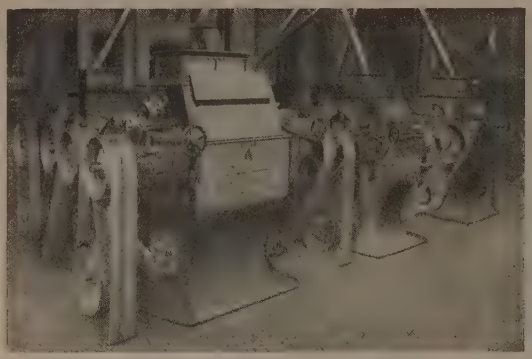

Fig. 4. Machines used in making flour

Fig. 6. Beet sugar factory

3. Our Food.—We eat our meals without thinking very much about our food. Let us find out where some of it comes from.

Bread is made from flour that can be bought at a grocery. But where does the grocer get the flour? Most of it is made from wheat.

Wheat is planted some weeks before winter begins, or soon after winter is over. When the wheat begins to grow, it looks like a coarse grass. In the summer the stalks grow tall, and a number of seeds form a head at the top. These seeds are the grains of wheat from which flour is made.

When the wheat is ready to harvest, it is cut and threshed, and the grain is sent to flour mills. There it is crushed between heavy rollers (Fig. 4), and the fine white flour is separated from the coarser parts by sifting.

Sometimes it is a long distance from the fields where the wheat grows, to the mills where it is made into flour. Even after the flour is ready for use, it must be shipped from the mills to different parts of the country, where it is sold in the stores. Both the grain and the flour must be handled several times, and much work must be done by many people, before we can have our bread.

In order that we may have butter, the cows on many farms must be fed, cared for, and milked (Fig. 5). The cream is separated from the milk, usually by machinery, either at the farm or at a creamery or butter factory. The butter is made from the cream and is sent to stores or markets to be sold.

Fig. 5. Milking with electric machines. The work is generally done by hand

Our sugar may be made from beets (Fig. 6) that grow in one part of the country, or from sugar cane that grows in another part. The juice from these plants is boiled and purified to produce the white sugar that is used to sweeten tea and coffee.

Tea is made from the leaves of a small shrub or bush that grows in a distant part of the world (Fig. 7). Coffee is made from the seeds of a small tree growing in hot countries. The leaves of the tea plant and the berries of the coffee plant, after being picked, must be carefully prepared for use. Many people work upon them before they reach our tables.

Fig. 7. Picking tea

So it is with nearly everything we eat.

A great many people are at work raising articles of food. Some of these can be used without change. Some must first be cleaned and cooked, and some must be prepared in other ways.

4. Our Clothing.—Some of our clothing is made from wool clipped from sheep. Sheep are usually raised in great flocks (Fig. 8). When their wool has grown long, they are sheared. The wool is then sent to mills where it is cleaned and made into yarn, from which cloth is woven. The cloth is finally sold, to be cut up and made into clothing.

Cotton clothing is made from the lint, or fiber, from the bolls of the cotton plant. This plant is grown in the southern part of our country. The picture (Fig. 9) shows a cotton field with many little white bolls of cotton fibers. After the cotton has been picked, it is first separated from the seed to which it clings. It is then spun into thread, and woven into cloth, and much of the cloth is made into clothing. Most of the spinning and weaving is now done in great mills (Fig. 3).

Silk is made from fine threads spun by silkworms. The worms are small and

U. S. Department of Agriculture, Forest Service

Fig. 8. It is wool from sheep like these that is used in making woolen cloth

U. S. Department of Agriculture

Fig. 9. Cotton cloth is made from the bolls of fiber borne by cotton plants

must be very carefully tended. They are fed upon the leaves of the mulberry tree. When they begin spinning the thread, they wind it around their bodies, covering themselves with many layers and thus forming a cocoon (Fig. 10).

Fig. 10. Silkworms and cocoon

In making silk cloth the fine thread that forms the cocoon is first carefully unwound. Several such threads are then twisted together to form a stronger thread, which is usually colored before it is finally woven into cloth.

Wool, cotton, and silk are the most important of all the materials used in making cloth for clothing. Our shoes and most of our gloves are made from the skins of animals. Our rubbers are made from a sticky gum obtained from trees that grow in warm countries.

People do not all wear the same kind or amount of clothing. In hot countries the clothing is thin and light, and many of the people wear only the simplest garments. In countries where it is nearly always very cold the people cover their bodies with clothing made of furs. In countries where the summers are warm and the winters cold the summer clothing is usually light and the winter clothing much heavier.

The making of our clothing requires the work of many people. Some of the materials used come from distant lands.

5. Our Shelter.—The buildings in which we live and work are made of wood, metals, brick, stone, and cement.

There are many different kinds of wood. Some kinds come from trees that grow in our own country. Other kinds come from distant parts of the world and are brought hundreds of miles over land and sea. The trees of the forest are cut down, the branches trimmed off, and the trunks cut into logs (Fig. 11). The logs are then taken to mills where they are sawed into lumber.

U. S. Dept. of Ag., Forest Service

Fig. 11. These logs will be sawed into lumber for use in building

The metals are found in ores that are dug from the earth. Before they can be used in making the bars, beams, pipes, screws, nails, and other metal articles used in building, all impurities must be removed. This is usually done by melting the ore in great furnaces. The furnaces are arranged so that at the proper time the pure metal is allowed to run out and the impurities are left behind. The pure metal is then made into useful or beautiful articles.

Most bricks are made of clay. They are first molded in small boxes

of the proper shape, and then burnt until they are hard (Fig. 12). At first the common red clay brick was almost the only kind that was made; but we now have bricks of many kinds and colors.

Fig. 12. Here the bricks have been put in piles so that fires may be built under them

Where a good building stone is found, the surface earth is cleared away, and the solid rock is cut or broken into blocks. These are then shaped and sent away to be used by the builders.

Cement is a powder made from a burnt mixture of lime and clay. It is generally used in making concrete, an artificial stone composed of cement, water, sand, and gravel or broken stone.

In making buildings men use the trees of the forest, and the metals, clay, and rocks of the earth.

6. People in Other Lands.—There are hundreds of millions of people in the world. There are tall people, short people and people of different colors. They speak languages that would sound strange to you. Their houses are not like yours. In some countries their clothes are in patterns you have never seen. You might not like their food. They all talk and eat and wear clothes and live in some kind of shelter, but they make things and do things in ways strange to us.

Fig. 13. Making Chinese matting

You would see some of them cultivating the soil, or planting fruit trees or vines, or raising grain and vegetables. Some would be tending cattle, sheep, or horses. Some would be digging valuable minerals from the earth, cutting down trees for lumber, or catching fish for food. Others would be making things to eat or to wear, or for use in houses (Fig. 13).

Everywhere people are at work in their own ways, that they may have good food, comfortable clothing, and safe and convenient places in which to live.

7. Life in Cold Countries.—In the colder northern parts of the world there are no trees, and much of the time the ground is covered with snow. The people who live the farthest north are Eskimos. As they have no railroads and no steamships, they cannot get their food and clothing from other countries. They depend upon what they find in their own country.

For their food they use the fish that they catch, and the bears, seals, and other animals that they kill. Most of their clothing is made of the skins of the animals that they kill for food. This clothing is simple. It usually consists of two garments. One is like a coat that has both gloves and a hood.

Fig. 14. Traveling in the far north

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The other is a combination of trousers and boots.

The men and women wear clothing so similar that they look very much alike. During the coldest weather an Eskimo often wears two suits. One is worn next to the body, with the fur inside, while the outer suit is worn with the fur outside. In the warmer weather only one suit is used, with the fur on the outside.

During the colder part of the year, when the ground is covered deeply with snow, temporary houses are built of snow blocks. A snow tunnel is built in front of the door, and in going into the house, or out, it is necessary to crawl through this tunnel. The tunnel is closed by a block of snow. A bank of snow is left along one side of the room, and furs are thrown over it. This is used both for seats and for beds. During the summer the Eskimos often live in tents made of skins. In the long winter they go back to huts made of stones and sods, or of wood when it can be secured.

Eskimos cook their food over a lamp in which they burn the fat, or blubber, taken from animals they have killed. When for any reason the meat cannot be cooked, it is eaten raw.

The Eskimos of the farthest north show great skill in making the tools and other things that they need. Their arrows, spearheads, fishhooks, and needles are made of single bones. Their bows, spear handles, and the framework of their sledges and canoes are made of driftwood picked up on the coast, or of a number of bones tied together. The canoe and sledge frames are covered with skins.

The Eskimos and other peoples of the far north train dogs to draw sledges over the frozen and snow-covered land (Fig. 14). In some cold northern regions reindeer also are used for this purpose. Reindeer may be killed for food and their skins used to make tents and clothing. Strips of skin serve for cords and ropes and are used in making harness.

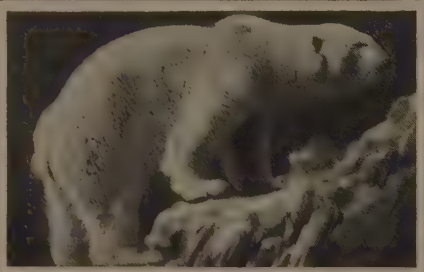


Fig. 15. The polar bear furnishes the Eskimo with both food and clothing

Life in cold countries is very different from that in our own land. The people of cold countries work very hard to get enough to keep them alive.

Fig. 16. A caravan on the Sahara, or Great Desert

8. Life in Hot Countries. — In those parts of the earth where the weather is hot every day in the year, the people need very little clothing except to protect their bodies from the burning sun.

Some of these hot regions are very rainy, and have a great variety and abundance of food plants. Bananas and other fruits, with the vegetables that are sometimes planted, furnish plenty of food. All the people need to do is to pick the fruit or gather the vegetables. Little meat is needed, but there is usually plenty of game. When this fails, sheep, goats, and cattle can be kept without much trouble. The people always have enough food and need little shelter.

Even the houses in such countries are very simple. The framework is usually of poles, and is covered with grass. Many houses are built in trees, for protection against enemies.

In other hot countries there is little rain. Generally such regions are barren wastes, or *deserts*, with a few stunted plants scattered over large areas. Life in the desert is very different from that in rainy regions. But here also the people must have food, clothing, and shelter.

One of the great deserts of the world is the *Sahara* in the northern part of Africa (Fig. 16). The desert is bordered by regions where there is enough moisture for a little grass to grow. In such regions the people keep cattle, sheep, camels, and goats. These they drive from one feeding place to another. The meat and milk from these animals furnish most of the food of the people. Much of their clothing is made of wool.

For shelter they use tents, which are easily put up and taken down. It is very important to have this kind of shelter, for when the flocks have eaten the grass of one pasture they must be driven to another, and the people move with them. During the day the tents furnish protection from the sun. During the night, when it grows cold on the desert, they are needed for warmth.

Some of the wandering people of the Sahara, as well as of other deserts, carry on trade with countries on opposite sides of the desert. In this way they are able to get food and clothing from other parts of the world. In crossing the desert they make use of the camel (Fig. 16), an animal that can live for many days without drinking. Usually several traders, each having a number of camels, travel together, forming a *caravan*. They do this to protect themselves and their goods from robbers.

In some deserts there are a few springs, with fields of grass and groves of date palms around them. Such fertile areas are called *oases* (Fig. 17). The grass furnishes pasture for cattle, sheep, camels, and goats. A little wheat is raised, and on the date palms grow great bunches of dates. The principal caravan routes across the desert lead from one oasis to another. Both men and animals can thus get food and water for the journey.

As it is so hot, the people of the desert wear loose garments. They also wind a strip of cloth about the head to protect themselves from the heat and the blowing sand of the desert (Fig. 16).

Life in the rainy parts of hot countries is easy. The people need only the simplest clothing and shelter, and they can get food without much work.

Fig. 17. Date palms in an oasis of the Sahara

In desert regions most of the people live a wandering life and depend upon their herds for food and clothing.

9. Life in Temperate Regions.—Those parts of the world which are neither very cold nor very hot are called the *temperate* regions. In most of them the summers are warm and the winters cool. During the warmer part of the year crops are grown. Mining and manufacturing are carried on the year round.

The clothing for summer is light, and that for winter usually much warmer. Where the winters are cold, houses and factories are built so they can be heated during the winter.

Only a few people live in the cold parts of the world. Great numbers dwell in hot countries, but most of all are in the temperate lands. The leading countries, including our own, are in temperate regions, and as we go on through this book we shall give the most study to these countries.

Review of Sections 1 to 9. — 1. What do we learn about in geography?

2. What are some of the things that farmers raise? 3. What does the miner do? 4. What is done with the food raised by the farmer, beyond his own needs?

5. How does the wheat that the farmer raises finally become bread? 6. From what is butter made? 7. From what two plants is sugar made? 8. From what is tea made? Coffee?

9. Where does wool, from which some of our clothing is made, come from? Cotton? Silk? 10. From what are our shoes and most of our gloves made? Our rubbers? 11. Why do not all people wear the same kind of clothing?

12. Of what are buildings made? 13. Where does the wood come from? 14. Where do the metals come from? 15. How are they prepared for use? 16. How are bricks and stones obtained?

17. In what way does the work of people in other lands differ from that in our own country?

18. Where do some of the Eskimos live? 19. Upon what do the Eskimos of the farthest north depend for food? 20. Out of what do they make their clothing? Shelter? Tools, sleds, and boats? 21. How does their summer shelter differ from their winter homes?

22. What kinds of food do the people have who live in hot, moist countries? 23. What sort of houses do they build? 24. How do the desert people live? 25. What sort of homes do they have? What kind of clothing? 26. What are oases? 27. What are caravans?

28. In what parts of the world are the greatest countries?

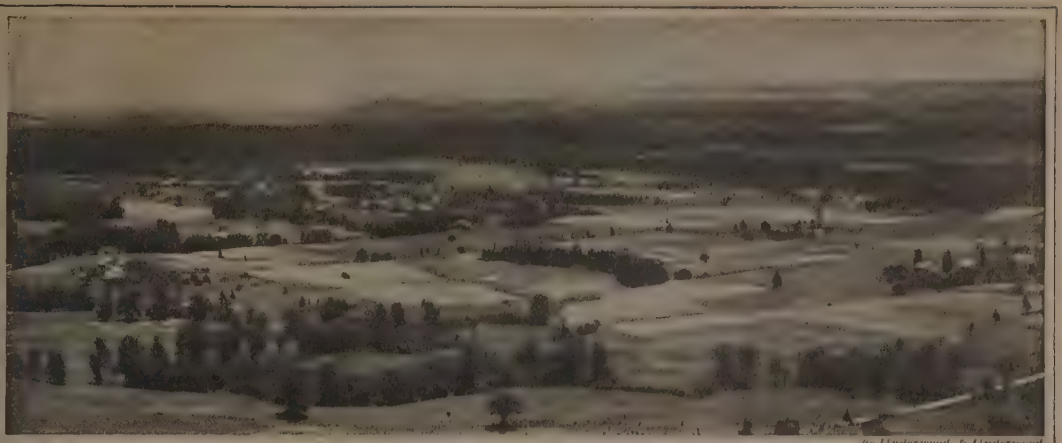


Fig. 18. A rich agricultural region of small farms and well-cultivated fields

AGRICULTURE

10. The Greatest Industry.—We have learned that most people work, or, as we say, they are engaged in some *industry*. The most important of all industries is *farming*, or *agriculture*, which is carried on in many parts of the world.

In some farming regions the houses of the people are close to one another, the land is divided into small farms, and much of the work is done by hand labor. Here, as in village gardens, many kinds of vegetables and other crops are grown.

In other farming regions there are fewer people, the farms and the fields are large, and big machines are used in doing a great deal of the work. Such farms are devoted almost entirely to a few crops. This kind of farming is seen in the great wheat farms and cotton plantations of our country.

In most farming regions, cattle, hogs, sheep, and horses are raised. This part of the farming industry is called *stock raising*.

Agriculture includes the growing of crops and the raising of domestic animals. It is the most important of the great industries.

11. The Importance of Moisture and Warmth.—A list of the useful plants raised in different parts of the world would be very long.

In such a list we should find some kinds of grass and grain that will thrive in regions of scanty rainfall; while other kinds, such as rice, require much moisture.

The list would include many plants that grow only where it is warm, and others, such as oats and barley, that will thrive in cool regions.

Cotton needs a long growing season, while many garden vegetables mature in a short time.

Some plants need more warmth, or more moisture, or a longer growing season than is necessary for other plants.

12. Importance of the Soil.—The soil, which is often called dirt, is so common that we do not usually think of it as being important. From it, however, nearly all plants get a part of their food. This plant food is dissolved in the water of the soil and is taken up into the plant through its roots. Many different plants are eaten by men. Animals also eat plants;

and the flesh of many animals is used for food by men.

The soil supplies necessary food for plants, and through them for animals and men.

13. How Soils are Formed.—When you examine carefully a pinch of soil, you will nearly always find that some particles are larger and harder than the others. If you pick these out and wash them, you will notice that they look like small pieces of stone or rock. That is what they are. Usually the soil contains vegetable matter composed of bits of the rotten leaves, stems, and roots of trees or other plants. In some soils there is very little vegetable matter, and in other soils there is a large amount.

Fig. 19. Stonework broken by sudden heating and cooling. Notice the pieces

Soils are usually formed of fine pieces of rock and decayed vegetable matter mixed together. Such soils are better for growing plants than soil made up of rock particles only.

14. How Rocks are Broken up to Form Soil.—There are several ways in which rocks are broken up to form soil.

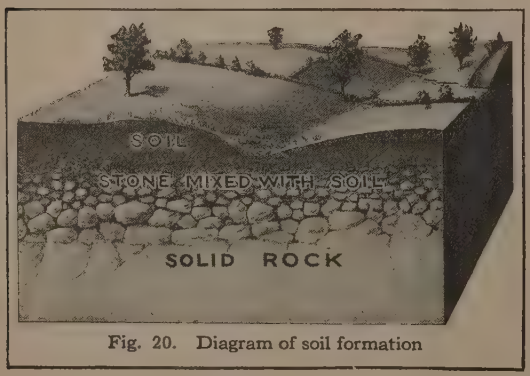


Fig. 20. Diagram of soil formation

When a bare rock surface is heated by the sun during the day, and cools quickly at night, little pieces often chip off and help to form a thin layer of soil. Such chipping may be seen when the stone walls or columns of a building are heated by a fire and then suddenly cooled by the stream of cold water from the fire engine (Fig. 19).

Some rocks, such as sandstone, are composed of small, hard particles held together by a natural cement. This cement may be dissolved by water, and the rock will then crumble into small pieces.

Most rocks have tiny spaces between the particles of which they are made, and water gets into these spaces. Put a dry piece of sandstone, or a dry red clay brick, into water and see how much it will take up. Water that gets into the tiny spaces, or into the larger cracks, and then freezes, will break off pieces of the rock.

The roots of trees, and even of such small plants as mosses, find their way into small openings in rocks, and then grow until the rock is split apart or pieces are broken off.

Rock may be broken up even when already covered with a surface of soil. It is sometimes possible to see where this has happened. It may be seen where a cellar has been dug or where a road has been cut through a hill. At the surface there is a layer of fine soil (Fig. 20). Underneath this the stone is broken very small and mixed with soil. Still

lower there are larger pieces of rock, and finally solid rock. Usually the rock breaks first into large pieces, and these into smaller and still smaller pieces, until they are finally changed into fine dirt.

In all streams where the water flows rapidly, as it does in the stream pictured on this page (Fig. 21), the smaller stones in its bed are tumbled about and rubbed against one another. This process wears the stone away, as you may prove by rubbing two wet stones together until you see that a fine mud is formed.

U. S. Geological Survey

Fig. 21. Rounded stones in the bed of a rapid stream

At times of flood the stones may be bumped together so hard that small bits are chipped off, or they are broken into pieces. These smaller pieces are also rubbed together and worn away.

Look at the stones in the bed of some swift stream near your home. You will see that many stones, of all sizes, are smooth and round. They have been worn into this shape by being rubbed and bumped together by the moving water, especially at times when the stream is larger and swifter than usual.

What becomes of the fine rock particles that are worn away from the stones? They may be carried along in the water for a great distance, but finally, when the water moves very slowly, they will settle and help to build up the bed or banks of the stream; or they may even be swept into some lake or ocean, and come to rest on the bottom near the shore.

Soil is formed chiefly from broken rock. Rocks may be broken by quick changes in temperature, by the dissolving of natural cement, by water freezing in them, by the growth of the roots of plants, and by the bumping together of stones in the moving water of streams.

15. The Soils of Flood Plains and Deltas.—When soil has been formed by the breaking up of rocks, some of it stays where it was made, and some does not. There are several ways in which the soil formed in this way may be carried to some other place. Soils are carried away by moving ice. Soils are moved also for long distances by winds. But rivers and streams carry more soil than is carried by ice or winds, and they may drop the soil far from the place where it was originally made.

Put a little soil into a bottle of water. Cork the bottle and shake it. You will notice that the water becomes muddy. Let the bottle stand for a while, and the water will become clearer and clearer as the particles of soil settle to the bottom. The largest pieces settle first, and the finest soil will be on top. If the bottle is again shaken, the water once more becomes muddy. As long as the water is in motion, it remains muddy. This will help us to understand how streams carry soil particles from one place to another.

During a heavy rainstorm the rain washes the fine soil from the surface of roads and fields, and fills the gutters and

Fig. 22. The level land along the river is part of a flood plain, and is a rich farming country

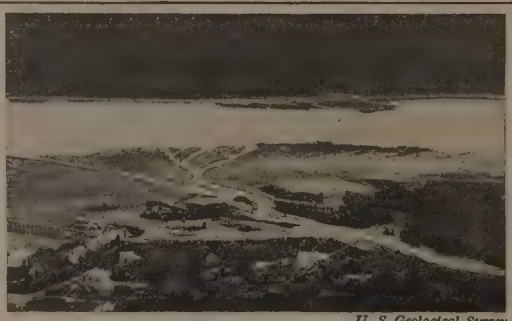
roadside ditches with muddy water. Tiny streams of muddy water are formed in the fields. These run together and form larger and larger streams until they flow into some brook or river. Even these large streams are filled with muddy water. This means that they are all carrying much fine soil along with them. Sometimes a stream flowing in a broad valley is so swollen that it overflows the bordering lowlands. When the flood water disappears, it leaves a layer of fine soil spread over the land. This is called *sediment.* In time such overflows build up a strip of level land, called a *flood plain* (Fig. 22).

Whenever a river moves slowly and particles settle to the bottom, the coarser particles settle first, as they did in the bottle when it was no longer shaken. The finest material will be carried the farthest, much of it by streams that do not appear to be moving swiftly.

A part of the finest soil is carried by some rivers until they enter a large body of still water. The water from the rivers then moves so slowly that even the finest material is dropped, thus building up the bottom near the shore. In time a low plain is built up, like a flood plain. As it increases in size, the river divides and flows through it in several channels. Such a plain at the mouth of a river is called a *delta* (Fig. 23).

Where a stream is rapid it is able to carry the soil swept into it by rains and by smaller streams. As it becomes less rapid in its lower course it finally drops the soil, thus forming flood plains and deltas.

16. The Making of a Valley.—What happens where streams are breaking up and wearing away the stones in their beds? What would happen if you should take a stick, draw a long mark in the dirt, and then scrape and scrape along that mark? You would dig a little ditch. As the ditch deepened it would also widen, and the more of the dirt you scraped away, the deeper and the wider your ditch would be.



U. S. Geological Survey

Fig. 23. The delta of a small stream

Fig. 24. The length and height of the bridge show that this stream has cut a deep valley

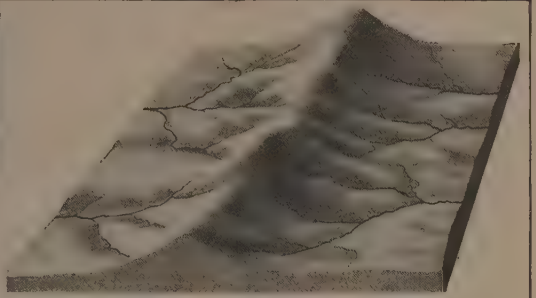


Fig. 26. A divide in a hilly district. Notice also the low divides between the little streams

That is what the streams are doing. They are cutting big ditches, which we call *valleys* (Fig. 24). The more the streams cut, the deeper the valleys become. Of course this work goes on very slowly and we see but little of it.

A valley widens as the banks of the stream are worn away by the water, and as the surface soil is washed into the stream by the rains. The stream may be bordered by flood plains that are nearly flat (Fig. 22), or the valley walls may be very steep (Fig. 25).

Higher ground that separates streams flowing in one direction from those flowing in an opposite direction is a *divide* (Fig. 26). A divide may be the sharp ridge of a hill or mountain, or it may be an irregular line winding across nearly level land.

Valleys are cut by the action of running water.

Fig 25. A deep and narrow valley, with bare rocky walls

17. Thin Soils and Deep Soils.—Much of the soil formed on the steep valley slopes is easily swept away by rain and running water. The steepest slopes have no soil at all (Fig. 25). Where the slopes are not very steep the soil is usually coarse and thin. In the lower parts of the valley, where the slopes are very gentle, and in the flood plains and deltas, the soil is fine and deep.

On the great plains of the world much of the soil remains where it was formed. The land is nearly level, and the rain that falls on it cannot form into rapid streams, as in countries where there are hills and valleys. But fine particles may be carried by the wind.

On steep slopes the soils are thinner and coarser than on gentle slopes. The deepest and finest soils are on plains, especially flood plains and deltas.

Fig. 27. A valley with fine, rich soil and large crops

18. Fertile Soils.—You have already learned that plants get some of their food from the soil (Sec. 12). Soils that contain much plant food are called fertile. The plant food in the finer soils is more easily dissolved than that in coarse soils, and the finer soils are usually more fertile. Each plant takes from the soil the food that it needs.

Rocks are not all made of the same material. Different rocks, therefore, contain different kinds of plant food. For this reason some plants will grow well on the soil formed from one kind of rock, and not at all well on the soil formed from another kind of rock. The best soil usually contains a mixture of rock materials, as well as some vegetable matter. The fine soils of river flood plains and deltas are mixtures of this kind. The soil has come from many parts of the river basin and is made up of particles of many different kinds of rock. Of course the largest crops are raised on the most fertile soils.

The richest farming regions are regions where the soils are deep and fine and contain many different kinds of rock particles.

19. How to Keep Soils Fertile. — All growing plants take some food from the soil; therefore when vegetables are gathered from the garden, or grain from the fields, the soil loses a part of the food that is needed by such plants. The growing of the same crop year after year robs the soil of one kind of plant food. If this is done for a long time, so much of this particular kind of plant food will be taken away that the soil will no longer grow that crop well. Sometimes, also, plants leave poisons in the soil that for a time destroy its fertility for certain crops.

The kind and amount of plant food taken from the soil is not the same for all plants. Because of this, many farmers plant different crops each year. This is called the *rotation of crops*. Even when this care is taken, the soil may need *fertilizers*, such as phosphate rock or barnyard manure. These restore to the soil plant food taken out by crops.

Soils may be kept fertile by the rotation of crops and by the use of fertilizers.

20. Farming in Densely Settled Countries.—In densely settled countries there are many people to be fed. The land is valuable and the farms are small. The ground is fertilized and the crops are watered and tended with the greatest care, so they will yield the largest return possible for each acre.

In some countries where there is not enough level ground to be cultivated,

the people have built terraces on the sides of hills and mountains (Fig. 28). In some regions they have carried soil from the plains and valleys and have built stone walls to hold it in position. In a few densely settled countries, people have even built rafts on the rivers and covered them with soil for their gardens.

Where there are many people much food is needed, and the soil is carefully used.

21. Village Gardens.—In large cities the land is so valuable that it is used only for streets, buildings, and a few parks and playgrounds. In villages the land is not so valuable. The houses are farther apart, and near each house there is usually a garden. It may not be large enough to raise all that is needed by the family, but if carefully cultivated it furnishes many fresh vegetables and small fruits.

When the right season of the year comes, the soil is prepared for the seed and the plants. It is first broken with the plow or spade, and then made finer with a harrow or a hand rake. If the soil lacks the necessary plant food, some fertilizer is usually mixed with it.

As soon as the ground is ready, it is marked off into regular spaces. The seeds and plants are then put into the ground far enough apart for them to grow well. When they begin to grow, they must be cared for. Weeds must be pulled up or cut down. The soil must be loosened around the growing plants, as this helps to keep the ground moist. If the weather is too hot and dry while the plants are still growing, they must be watered. Care must also be taken to kill injurious insects.

In villages many people supply themselves with fresh vegetables from their own gardens.

22. Truck Farming.—In cities, fresh vegetables are bought at the stores or markets. But where does the storekeeper get them? A little trip to the country will help us to answer this question. Near the city we shall find a large number of *truck farms*, as they are called, and many gardeners busy raising vegetables and fruits for the city markets. A large part of the work is done by hand.

Many of the truck farmers bring their vegetables to the city in wagons, and either sell them on the streets or stop at some

Fig. 28. Terraces on a hill beside the river Rhine

Fig. 29. Truck farmers selling produce in a city market

Fig. 31. A grain drill planting seed

public market, where people may go and buy them (Fig. 29). But some of the truck farms are a long distance away. To bring the products of these farms quickly to the city, there are fast trains, of special cars, ventilated and supplied with ice, so that the fruits and vegetables will not spoil.

Many of the fresh vegetables used by city residents are raised on truck farms where much hand labor is necessary.

23. **Farming with Big Machines.**—Among the largest and most beautiful farms in the world are those in the great wheat-growing regions of our own country. Much of the land is nearly level. The soil is fine, deep, and rich. There is the right amount of heat and moisture for growing wheat. Most of the work is done by machinery. The plowing is done with a *gang plow*, which turns several furrows at a time (Fig. 30). The grain is put into the ground with *drills* (Fig. 31). In cutting or harvesting the grain two kinds of machines are used.

In Figure 33 the machine shown at the left is the *reaper and binder*. This cuts the grain, gathers and ties it into bundles, and drops a number of them in one place. The bundles are afterwards taken to a thresher, where the grain is separated from the straw (Fig. 32).

The other kind of harvesting machine, called the *header*, cuts the wheat heads from the standing straw, and threshes and sacks the wheat as the machine moves along.

On many large farms machinery is used to do most of the work.

Fig. 30. A gang plow

Fig. 32. A threshing machine at work in a wheat field

Fig. 33. Harvesting wheat. The bundles of grain, cut and tied by the reaper, are afterwards run through the thresher. The wheat is put into bags, the straw is blown out through a big pipe

Review of Sections 10 to 23.—1. What is agriculture? 2. Name two things that are necessary for the growth of plants. 3. What do plants get from the soil? How? 4. How do men and animals get food from the soil?

5. Of what is soil made? 6. Where does the decayed vegetable matter come from? 7. In what ways may rocks be broken up? 8. What happens to the stones in the bed of a swift stream?

9. What makes water muddy? 10. How do rainstorms make a stream muddy? 11. What finally becomes of the fine soil that the muddy streams are carrying? 12. What is a flood plain? 13. What is a delta? 14. Where and how are deltas formed?

15. How are valleys formed? 16. How do valleys grow wider? 17. What is a divide?

18. Where do we find fine, deep soils? 19. Where are the soils coarse and thin? 20. What kind of soil is called fertile? 21. How may soils be kept fertile?

22. Why do people in some countries build terraces on mountain slopes? 23. What use is made of gardens in villages? 24. What are truck farms? 25. What is done with the vegetables and fruits raised on these farms?

26. In the great wheat-growing regions of our country, how is the plowing done? How is the planting done? The harvesting? The threshing?

DAIRYING AND GRAZING

24. Dairying in Hilly Countries.—As we have learned, the richest and best agricultural soils are found in the flood plains and deltas of rivers. These soils are fine and easily worked. The plant food in them is quickly dissolved. The soil particles have come from many different kinds of rock in many parts of the valley and furnish food for a great variety of plants. Other soils, almost as good, are found in level regions and on gentle slopes where they were formed.

On the upper slopes of hills the soil is usually thin, and crops cannot be successfully cultivated. Such places, if not given up to forests, are generally used as pasture lands for cattle, sheep, and horses. In many parts of the world the people who live in hilly lands keep cows for milk and spend much of their time in taking care of their herds. This kind of work is called *dairying*. Figure 34 shows a herd of cows on a dairy farm.

So great is the demand for fresh milk in cities that many farmers near them engage in the dairying industry. A very large city needs a great quantity of milk; and part of the supply is brought by fast trains (Fig. 35) from the more distant dairying districts of hilly regions. In dairying districts from which the milk is not sent to cities, it is condensed and canned, or made into butter and cheese.

The dairy farmer was at one time careful to keep no more cattle than his pastures would feed. Now he sometimes finds it profitable to buy feed and keep a larger number. The chief product of a dairy farm is milk, although some of the cattle are sold for beef.

Fig. 34. A dairy farm in a hilly country

Large crops cannot be grown on the thin soils in hilly regions; but such land makes good pasture for cattle and sheep. The cattle are kept mainly for their milk. The sheep are raised mainly for their wool, and for mutton.

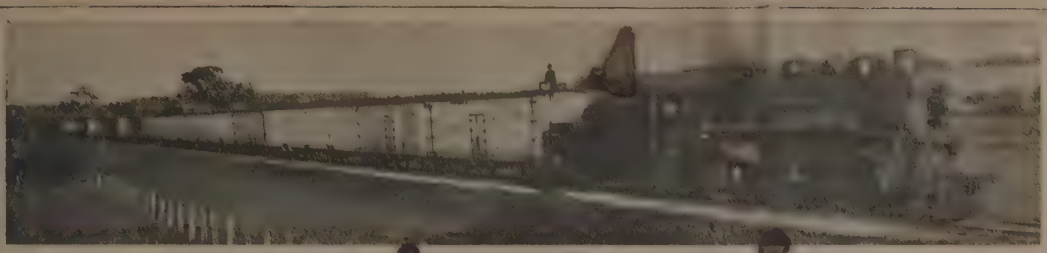


Fig. 35. A milk train on its way to the city. Each car contains many cans of milk

25. Mountains and Mountain Pastures. Figure 34, on the opposite page, shows a dairying district in a land of hills and valleys. The valleys are broad and open, the slopes are gentle, and the hills not very high. A man can easily climb from the bottom of the deepest valley to the top of the highest hill in less than an hour.

Some hills are much lower than the ones shown in this picture, while others are much higher. The highest ones are usually called not hills, but *mountains*. There is little difference between high hills and low mountains. Some mountains are so high that their tops, or *peaks*, are often hidden by the clouds.

A few mountains rise above the surrounding plain as single peaks. Most mountains, however, stretch across the country for a long distance and form a mountain *range*. Such mountains are difficult to cross, especially when there are several ranges lying side by side. When people have found it necessary to cross a mountain range, they have searched out the low places, or *passes;* and through some of the passes wagon roads or railroads have been built.

Every one who climbs a high mountain notices that it is cooler at the top than at the bottom. The higher the mountain, the greater the difference. On the upper slopes of the highest mountains, even in warm countries, snow falls instead of rain. During the winter this snow covering may reach a long way down the mountain side. As summer comes on, the snows on the lower slopes melt, but the upper slopes are covered with snow throughout the year (Fig. 36).

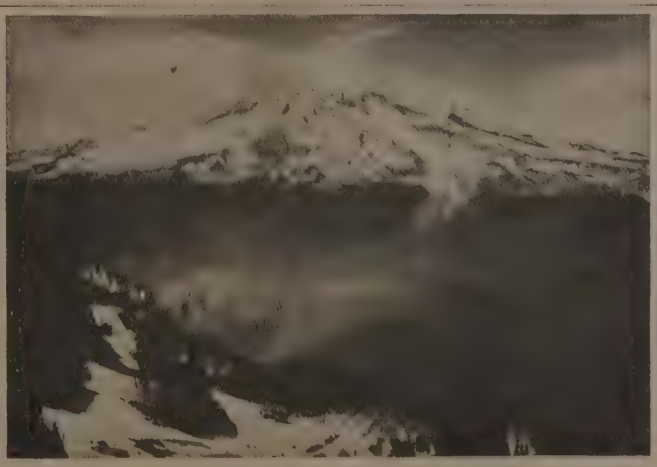


Fig. 36. One of the beautiful snow-covered mountains in the western part of our country

In these regions of perpetual snow nothing grows. Fields of snow and ice, and bare, wind-swept rocks, are all that can be seen.

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Fig. 37. Cattle on the great plains of the West

In mountain regions some slopes are almost vertical. They form great *cliffs* of bare rock. Many of the cliffs are where rivers have cut deep, narrow valleys called *canyons* (Fig. 25). On the steeper slopes of hills and mountains most of the soil has been carried away by the wind, rain, streams, and melting snow. In the valleys, however, on the gentler slopes, and in hollows among the rocks, some soil is found. During the summer these places are covered with grass and make excellent pastures.

In some countries the mountain people keep herds of cattle and sheep. During the winter the animals are kept under shelter. At the beginning of summer they are turned out to pasture. As the snow melts, the herds are driven up the mountain side to the higher pastures. When it begins to grow cold again, they are driven slowly down the mountains, feeding as they go. Winter finds them once more in the sheds and barns at home. The cattle and sheep are kept out of some fields, and the grass there is cut and carried home to be fed as hay during the winter. On the mountain dairy farms much butter and cheese are made.

Excellent pasture lands are found on the higher slopes and in the valleys of some mountain districts. Here the people are engaged mainly in the dairying industry.

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Fig. 38. Stockyards where cattle are sent to be sold to meat packers

26. Grazing on Great Plains.—In some parts of the world are great plains where the soil is rich enough to be cultivated, but where there is not enough rain for the growth of crops. In such regions, where there is enough rain for grass, the people keep great herds of cattle, sheep, and horses. These are *grazing* regions.

The herds roam over the country in search of grass and water. They are carefully watched and cared for by men on horseback. In the summer time these men often sleep out of doors, wrapped in blankets.

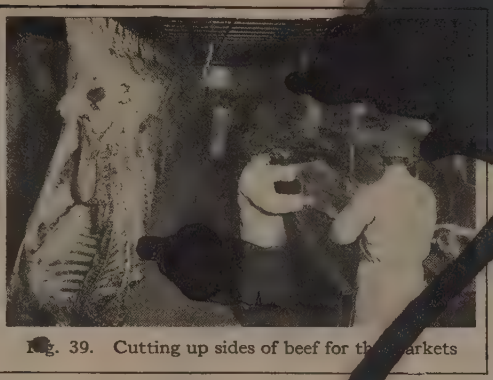


Fig. 39. Cutting up sides of beef for the markets

In grazing countries, cattle are raised for their meat and for their hides. When they are old enough, they are fattened at some farm or ranch and then sent by rail to a city where there are stockyards (Fig. 38). After they have been killed, the meat is cut up (Fig. 39) and sent in cars or in ships (Fig. 40) to distant places for sale. Every part of the animal is used. The hide is made into leather, some of the bones are made into buttons and knife handles, and other bones, with meat scraps, are made into fertilizer. Even the hoofs are used in making gelatin and glue.

Formerly, in some parts of the world where sheep were not needed for food, they were raised chiefly for their wool and skins, and the flesh was of little value. That was because the wool and the skins could be sent long distances without spoiling, but the meat could not. Now, by the use of refrigerator cars and ships, it is possible to freeze or chill meat —either mutton or beef—and keep it fresh while it is sent to distant markets.

Great plains that are too dry for most crops are used as grazing regions. Here the cattle are raised chiefly for their meat and hides, and the sheep for their wool, meat, and skins. Meat may be chilled and thus kept fresh for a long time.

Review of Sections 24 to 26.—1. What is dairying? 2. Where are there many dairy farms? 3. What is done with the milk? 4. What are mountains? 5. Why does snow often fall instead of rain on high mountains? Where is there perpetual snow? 6. Why do we not expect to find much soil on the higher mountain slopes? 7. Where on mountains is there some soil, and what grows there? 8. For what are these fields used?

9. What kind of land is a grazing region? 10. How is the grazing industry carried on? 11. For what are the cattle raised? 12. Where are the cattle killed, and what becomes of the meat? The hides? The bones? 13. How is fresh meat carried long distances without spoiling?

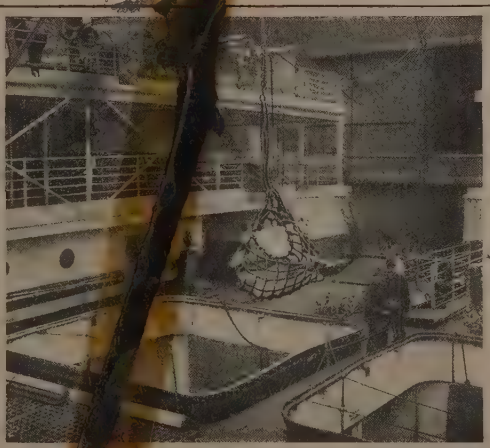


Fig. 40. Loading meat on a ship

LUMBERING

27. Forests of the Early Days.—Many years ago, when settlers first came to our country, they found most of the land covered with trees. The *forests* stretched over the hills and valleys and high up the mountain sides. As much food was needed,

U. S. Dept. of Ag., Forest Service

Fig. 41. It was in log houses like this that the early settlers lived

the early settlers began at once to clear land for cultivation. Trees were cut down and used for building log houses (Fig. 41), split into rails for fences, or burned to get them out of the way.

As more people came to this country, the forests were cut down very rapidly. Sawmills were built to cut the logs into lumber. Forest fires also destroyed many trees (Fig. 42). Nearly all the forests on the river flood plains and on the lower slopes of hills have now been cut down.

At one time there were very large forests in this country. In the early days many of the trees were destroyed because they were in the way. Later, the forests were cut down for timber.

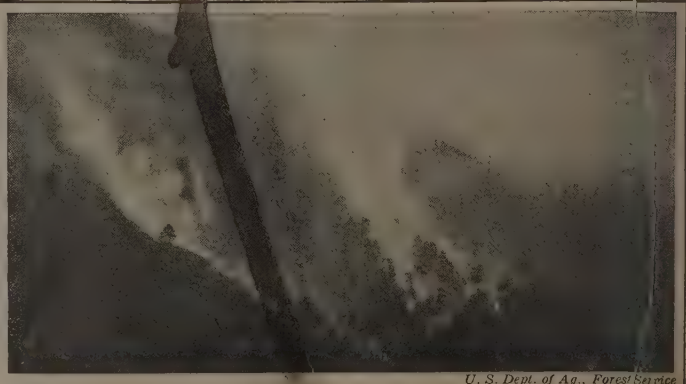
28. Forests of the Present Day.— Only a few large forests are still standing in our country. Some of them are at a long distance from the great lumber markets, and in regions where much costly work is needed to get out the trees. For this reason lumber is constantly increasing in price.

The forests are now more carefully protected and cared for than formerly. Our government has set aside some large tracts of land for the growth of forests. Such reserves are called *National Forests*. Men are employed to watch them to prevent fires and the stealing of timber, and to plant young trees where the old ones have been cut off.

Lumber is still largely used in building, except in the parts of large cities where there is much danger of fire. There buildings must now be constructed of stone, brick, steel, and concrete, but lumber is used for finishing and for furniture. Much wood is used also for making paper.

There are at the present time few great forests in the country, and lumber has become valuable.

29. From the Forest to the Sawmill.— You have already learned how trees are cut into logs in the forest (Sec. 5). In the northern part of the country this logging is usually done in the winter, after the snow has fallen. It is then easy to haul the logs on big sleds over the icy roads. Many of the logs are hauled to streams, where they remain until the ice and snow melt. They are then floated downstream to mills.



U. S. Dept. of Ag., Forest Service

Fig. 42. A forest fire. Much valuable timber has been ruined in this way

U. S. Dept. of Ag., Forest Service

Fig. 43. Loading great logs on cars to be sent to the lumber mills

In the mountains lumbermen often shoot the logs down slides built on the mountain side, and they sometimes use wire cables pulled by engines to draw the logs to the level ground. Logging trains (Fig. 43) then carry them to sawmills. At the mills (Fig. 44) the logs are sawed into various kinds of lumber, to be used for buildings, furniture, and other things.

The trees are cut into logs in the forest and sent to the sawmills to be sawed into lumber.

30. Forests and Floods.—Forests on hillsides and mountain slopes help to prevent floods. The rain that falls in forest regions does not run off the surface or collect in streams so rapidly as it does in regions that are under cultivation. A part of the rain in each storm is used by the plants, some of it runs slowly down the tree trunks, and much is caught in little hollows or held back by the dead leaves and mosses on the ground. The snow that falls on forest-covered slopes is so sheltered by the trees that it melts slowly when the weather becomes warmer.

In hilly regions where forests have been cut away, the water from rains and melting snow may run rapidly over the fields, carry away the surface soil, and cut gullies. It may also gather quickly into the streams and cause floods, resulting in the destruction of property and the loss of life.

Forests help to prevent floods. When forests have been cut in hilly countries, the soil may be washed away.

Fig. 44. A sawmill. The band saw runs around two wheels

Review of Sections 27 to 30.—1. Where were there forests when the first settlers came to this country? 2. Why were the trees cut down? 3. Which forests were destroyed first? 4. What forests are left? 5. What has our government done to help save the forests? 6. Where have people stopped using wood for buildings? 7. Why has lumber become valuable? 8. What is done to the trees in the forest after they have been cut down? 9. How do the logs reach the sawmills? 10. What disasters sometimes happen in countries where the forests have been cut away?

QUARRYING AND MINING

31. Useful Materials from the Ground.—The soil made up of broken rock is valuable (Sec. 12). But many of the rocks that are not yet broken up are also useful. Some of the finer and harder kinds of rock are used in building. One of these is slate, which splits into thin sheets and is used on the roofs of buildings and for school slates and blackboards. Granite and marble are much used in building where a durable stone is needed. Some large buildings are made of white marble, but the best white marble is used for statues. Large quantities of sand, broken stone, and cement (Sec. 5) are used in making concrete buildings, bridges, and roads. Many rocks, called *ores*, contain metals such as iron, copper, lead, gold, and silver.

Fig. 45. A granite quarry

The rocks of the earth supply building stone and the ores of valuable metals.

32. Quarrying the Stone.—The work of getting stone, other than ores, out of the ground, is called *quarrying*. There are many kinds of building stone. Most of the quarries that are worked are near the places where the stone is to be used. Stone is so heavy and its transportation is so expensive that only the best kinds are sent long distances. Figure 45 shows a quarry from which great blocks of beautiful granite are taken. These blocks are lifted to the surface, where they are cut into the forms that the builders want. Most of the work is done by machinery.

From quarries men get many kinds of building stone.

33. Coal and the Ores.—The work of getting coal and the ores of iron, copper, gold, silver, and the other metals from the ground is *mining*. Some gold, silver, and copper are found nearly pure, that is, not mixed with rock. Generally, however, these and the other metals are contained in ores, and need to be separated from rock or other impurities. The separating is done in furnaces called *smelters*, which are built near mining regions.

Our most important mineral is coal, which is much used as a fuel. It is found in many different places, and usually between layers of rock. In some places both rock and coal layers are bent and broken, and the coal may show on the surface of the ground. In other places the layers are nearly level, as may be seen along the sides of river valleys where the streams have cut through both rock and coal.

Most of the valuable ores, such as iron, copper, gold, and silver, are buried among the rocks of the earth. Some ores are found in the cracks of rocks and show only a little at the surface. In order to reach the more valuable ores it is usually necessary to dig deep holes, or *shafts;* and from each shaft the miners dig tunnels, or *drifts*, into the masses of ore.

Fig. 46. An electric engine hauling a train of loaded coal cars from a mine

Much ore is found in mountainous countries, because there the rocks have been bent and broken, and the cracks in the rocks have been filled with minerals. Where these rocks are not covered with soil, the ores may easily be found. In plains, the rocks contain less ore, and are hidden by the deep soil.

In one part of our own country there are large masses of iron ore lying near the surface. The ore crumbles to pieces easily. It is so easy to handle that it is taken up in scoops worked by machinery (Fig. 48), and loaded at once on cars.

From mines men get coal and the ores of metals. In some places these minerals show at the surface, but generally it is necessary to dig shafts and tunnels to reach them.

34. Mines in the Higher Mountains.— Many deposits of ore have been found among mountains where mines have never been opened because it would cost too much to get the ore to a smelter. Only the most valuable of the mines in the higher mountains can be worked. In some places it is impossible to reach the mine except by a dangerous narrow path, winding up the side of the mountain.

Fig. 47. In the interior of a coal mine

Fig. 48. Mining iron ore in an open pit (in Minnesota)

Sure-footed donkeys, or burros, may be used to bring down the ore and to carry the food, tools, and other supplies for the miners. Where there are many mines, or where they are rich in metal, engineers have found ways of building railroads into the mining region.

The ores in high mountains are difficult to reach. Many mineral deposits have been found that are not rich enough to pay for working.

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Fig. 49. A man car

35. A Visit to a Copper Mine.—A trip into a mine is very interesting. Let us visit one of the deep copper mines in the northern part of our country. Wear your old clothes and, if possible, rubber boots and a rubber coat and hat. The water in the ground makes its way into the mine, and it sometimes drips from the roofs and sides of the tunnels.

Over the top of the shaft is a house containing the machinery used in lowering the miners to their work and in lifting out the ore. The miners are lowered into the mine in what is called a man car (Fig. 49). When their work is over, they are taken out in the same way. Buckets called skips are used in taking out the ore. A bucket of ore is lifted very quickly, but the machinery can be controlled easily, and the man car does not make the trip so rapidly.

We step into the man car, and it begins to descend. Deeper and deeper into the earth it goes. Much of the shaft is dark, but as we drop lower and lower we may get glimpses of lights as we go by the ends of drifts that lead away into the earth. Finally, after passing several of these openings, the car stops, and we step out. In front of us is a long drift. Along its floor runs a narrow railway track, and in the distance we can hear the miners at their work.

We follow our guide, who points out to us the copper ore in the rock, and we watch the miners at work. In order to loosen the ore it is necessary to drill holes into the rock. These holes are filled with dynamite, and when this is exploded, several tons of ore fall to the floor of the drift. Usually the ore is so broken up that it is only necessary to shovel it into cars which stand on the track. When a car is filled, it is moved away, and an empty one takes its place.

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Fig. 50. Loading copper on a lake steamer

The loaded cars go to the shaft, where their loads are dumped into the buckets, to be lifted to the surface and sent to the smelter. There the ore is crushed, the impurities removed, and the copper run into bars. Figure 50 shows some of the copper as it comes from the smelter.

In busy times the mining goes on both day and night. As soon as one shift of men stop work another shift come to take their places.

The copper mine that we are visiting is lighted by the lamps and candles of the miners, but many mines are now lighted by electricity.

We notice with surprise that there is fresh air even in the deepest part of the mine. Our guide tells us that it is forced into the mine through pipes by powerful machinery. The water that drops from the walls and from the roofs of the tunnels runs into a hole or well and is pumped to the surface.

Perhaps it will be possible for your teacher to take you on a trip to see a mine or a quarry near your home. Frequent excursions should be taken to study geography out of doors. In this way you will learn many interesting things about the plains, valleys, and streams, and about the work that men are doing.

Fig. 51. Where one stream is joined by another

Review of Sections 31 to 35.—1. For what are rocks useful? 2. For what is slate used? Marble? Granite? 3. What are ores?

4. What is quarrying? 5. How is the stone taken out? 6. What is done with it before it is sent to the builder? 7. Why do builders generally use stone from quarries near at hand?

8. What is mining? 9. What metals are sometimes found nearly pure? 10. What is done with ores? 11. Why are mines more easily found in mountainous countries than in plains?

12. How are mines supplied with fresh air? 13. How are the mines kept from filling with water? 14. How are miners lowered to their work? 15. What are shafts? Drifts?

THE WATERS OF THE EARTH, AND THE FISHING INDUSTRY

36. How Rivers Begin.—Some streams flow out of swamps or lakes. Others have their *sources* among the melting snows and ice of high mountains. Most streams, however, start in a different way.

The next time it rains, see what happens to the water that falls to the ground. You will notice that a part of it begins to gather at once into little hollows. As soon as these hollows are full the water overflows and forms tiny streams that run over the surface. Most of them dry up soon after the storm is over.

You cannot see, however, what becomes of all of the rain water, for some of it sinks into the ground. This is called *ground water*. It makes its way through the soil, and furnishes the supply of water needed by growing plants. At some distance under the surface the ground is soaked with this water. That is why a deep hole will fill with ground water and become a *well*. In many places, too, in valleys and low spots, the ground water of the higher land comes out to the surface, forming a *spring*.

Many streams have their sources in springs. These spring-fed streams may be at first so small that they are almost lost in the grass which covers their banks. They grow larger as the waters of other springs flow into them, and as they are joined by other streams (Fig. 51).

The beginning of a stream is called its source. Streams may have their sources in the melting snow and ice of mountains, in swamps or lakes, or in springs.

37. Rivers and River Systems.—The rivers of a country, seen from a high place, look like wide and narrow ribbons of silver winding among the hills and through the fields. In each group of streams there is one stream that is larger and usually longer than all the others. This is the *main stream*. The streams that flow into it are called its *tributaries*. The main stream, with all its tributaries, is called a *river system*. The land drained by a river system is a *river basin*.

Fig. 52. The Mississippi river system

In Figure 52 point out a tributary. Lay thin paper over the figure, and draw your pencil around the river basin. Figure 52 shows the Mississippi river system, the largest river system in our country and one of the largest in the world. The river basin is very large, and a wide strip from north to south through its central part is a region of great plains. The main stream has its source in a small lake on the plain marked *s*; but many of the tributaries have their sources among the mountains which border the great plain on the east and on the west. Here the slopes are steep and the rivers rapid. Even small streams have cut deep, narrow valleys into the rock (Sec. 16).

At the bottom of such a narrow *gorge*, or *canyon*, the stream often plunges over a rocky ledge in a *waterfall* (Fig. 53). Where several little falls follow close together, they form a *cascade*. In places where there are no falls but where the water moves very swiftly down an incline, it forms *rapids*.

Several of the tributaries of the Mississippi system are themselves large and important rivers with many smaller tributaries flowing into them. Find the longest tributary of the Mississippi and trace it back to its source. It rises among the mountains, and during the first part of its journey it flows swiftly through narrow, steep-sided gorges. As one tributary after another joins it, the river grows rapidly larger. Its valley becomes more open. The hills along its banks are lower and have gentler slopes. Finally it leaves the highland region altogether and flows across great plains toward the main stream.

Several of the tributaries of the Mississippi are like this longest one. One after another they join the main stream, which finally becomes one of the largest rivers of the world. In its lower course it is bordered by broad flood plains built of the sediment that has been brought to it by its tributaries (Sec. 15). It carries much of the finer material until its waters flow into the Gulf of Mexico. Here, at its mouth, even the finer sediments are deposited, and of these a large delta has been formed (Sec. 15). Across the delta the river finds its way to the Gulf through several mouths. Not all rivers build such

Fig. 53. Great Falls and Grand Canyon of the Yellowstone River

deltas. Some widen at their mouths and end in great *bays*, where their waters are lost in those of the ocean.

A journey through the region drained by the Mississippi river system would show many of the industries about which you have been studying. On farms and plantations you would see great fields of wheat, corn, and cotton. Among the hills and mountains and on the plains you would find many dairy farms and large numbers of cattle and sheep. In some parts of this drainage basin large forests are still standing. You could follow the trees from the time they are cut until they are sawed into lumber. Mining also is carried on in this river basin. In different parts of it there are large mines of coal, iron, copper, gold, silver, lead, and zinc.

In visiting the streams near your home see if you can find a main stream and a tributary; a waterfall, cascade, or rapid; a bay, a delta.

Many rivers flow at first swiftly in narrow valleys; are made larger by tributaries; flow slowly through flood plains in their lower courses; and end in a bay or in several mouths crossing a delta.

38. Fishing in Rivers.—Agriculture, including dairying and grazing, is the most important of all industries because we depend upon it for so much of our food. Another industry, however, from which we get a part of our food, is *fishing*.

In the clear, cold waters of many brooks and mountain streams are brook trout and other fine fish. They are difficult to catch, and men who love the sport often travel long distances to have a day of fishing (Fig. 54).

Fig. 54. Fishing in the clear, cold waters of a mountain stream

In many of the larger rivers there are, at certain seasons of the year, great numbers of fish. During a part of the year the fish are protected by law, but at other times they may be caught. Nets, traps, and fish wheels are used. In the rivers in the northwestern part of our country there are at times so many salmon that they crowd one another in the water. Large numbers of these fish are canned and sent to distant parts of the world to be sold.

Fig. 55. Where the ocean beats against the edge of the land

Fish are used as food. The most important food fish taken in rivers is the salmon.

39. Swamps, Lakes, and Ponds.— There are many springs in upland pastures and in forests. Where the land is nearly level or has such a gentle slope that the water does not easily run off, the springs make the ground wet and thus form a *swamp*. Swamps are found also in poorly drained lowlands.

Where there is a basin or hollow in the land the water from springs may collect and form a *lake* or *pond*.

A lake or pond may also be formed by the waters of a river held back by some natural or artificial dam. The stream that flows into a lake and forms its *inlet* is constantly bringing in sediment to fill the hollow in which the lake rests. The stream that flows from the lake and forms its *outlet* is as steadily cutting its valley deeper, and in time may cut deep enough to drain the lake entirely.

In many lakes fish abound, and on large lakes fishing is an important industry.

Some swamps and lakes are formed by springs on nearly level land. Others are made by natural or artificial dams.

40. The Ocean.—What becomes of the water that flows day after day in the small streams and in the great rivers of the world? Most of it finally reaches the *ocean*. The ocean is a very large body of salt water that has gathered in the great hollows and low places of the earth. The land upon which people live is the part of the earth that is not covered by the waters of the ocean. If you should start from home and travel straight ahead in any direction, you would finally reach the edge of the land. Beyond it you would see the ocean (Fig. 55).

The ocean covers nearly three fourths of the earth's surface. From the land you can get no idea of its size. You could get a much better idea by traveling over the ocean. Even the fast steamers that make trips between our country and the nearer countries on the other side of the ocean, are out of sight of land for several days. On longer trips to more distant countries the sailors may not see land for several weeks.

The land is bordered on every side by the ocean. Ships crossing the ocean may be out of sight of land for days or weeks at a time.

Fig. 56. How a current is formed

Fig. 57. Seashore cliffs

41. Waves and Currents.—When the wind is blowing, the surface of the ocean is nearly always rising and falling in *waves*. Along the shore the water that forms the waves moves forward a little. It flows forward and back on the low sandy beaches, and dashes against the higher rocky shores. Out in the open ocean the movement of the water in waves is chiefly up and down. One can see how this is by shaking a large piece of cloth up and down. Its surface will form waves that appear to move across the cloth; but it is plain that the cloth itself does not move forward. It moves only up and down.

The size of waves depends upon the strength of the wind. Gentle winds make small waves, but during great storms the ocean waves are so high that they sweep over the largest ships.

In some parts of the ocean the surface waters have a slow, steady, forward movement. These moving masses of surface waters are called *currents*. They are formed where the winds blow for a long time in the same direction. The forward movement of the water cannot be seen. Men found out about these currents by studying the direction taken by objects floating in the water. One may see how such currents are formed by blowing slowly and steadily along the surface of a basin of water (Fig. 56).

Waves and ocean currents are caused by the winds. In waves the water rises and falls. In currents it moves slowly forward.

Fig. 58. Sandy beach at one of our noted winter resorts

42. Shore Forms of Land and Water.—The shore line where the land and water meet is usually irregular. In some places there are high and rocky cliffs (Fig. 57).

Fig. 59. Islands

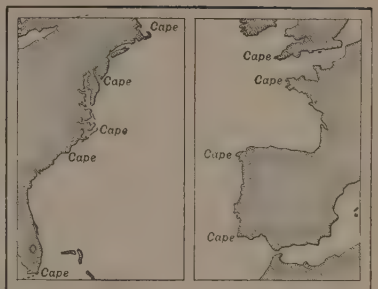

Fig. 62. Capes

Fig. 60. Peninsulas

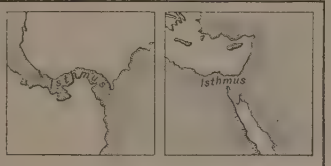

Fig. 61. Isthmuses

many thousands of islands in the world.

A body of land that reaches out into the water and is almost surrounded by the water is called a *peninsula*, a name that means "almost an island" (Fig. 60).

A narrow neck of land connecting two larger land masses is called an *isthmus* (Fig. 61).

A point of land extending into the water is a *cape* (Fig. 62).

A body of water connected with a larger body of water, but partly shut off by land, is called, in some cases, a *sea* (Fig. 63);

In others the slope of the land is very gentle, and here long, smooth, gently sloping *beaches* are formed. Many of the beaches are sandy and are fine places for bathing. Along some of them summer resorts have grown up. One of the most famous winter resorts in our country is near the beach shown in Figure 58.

The small drawings on this page and the next show some of the forms of land and water found along the ocean shores in different parts of the world. The shaded parts are land and the white parts are water.

Seven of the largest land masses in the world are so very large that they are called *continents*. Smaller bodies of land that are surrounded by water are called *islands* (Fig. 59). Some islands are much smaller than others. Many islands are near the large land masses, but there are also many others in different parts of the ocean. There are many,

Fig. 63. Seas

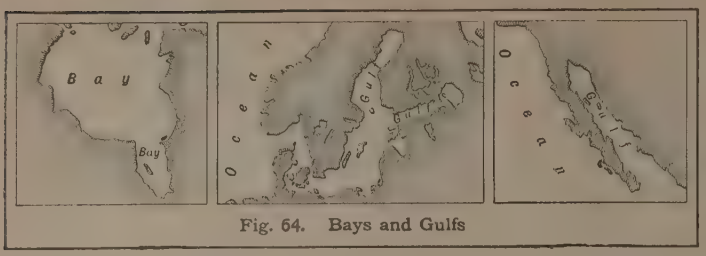

Fig. 64. Bays and Gulfs

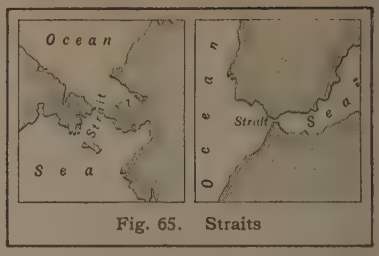

Fig. 65. Straits

in other cases a *gulf;* and in others a *bay* (Fig. 64).

A narrow passageway of water that connects two larger bodies of water is called a *strait* (Fig. 65).

Visit the shore of the largest body of water near your home. See if you can find an island, a peninsula, an isthmus, and a cape. Perhaps you can find a place where the shore bends inward to form a small gulf or bay. Model these forms in sand in a shallow basin which you can partly fill with water.

43. Fishing in Ocean Waters.—In the shallow ocean waters that border the continents there are large numbers of fish. Among the most important fishing grounds are the cod fisheries off the northeastern coast of our own country. When the season opens, the fishermen go out in small ships to the fishing grounds and stay there until their ships are loaded, or until the fishing season is over. If the boats remain away from port a long time, the fish are cleaned and salted. When the boat returns to port the salted fish are usually dried on racks in the open air. Other important food fish found in the ocean are the mackerel, the halibut, the salmon, the herring, and the sardine. Oysters, clams, and lobsters are found in the shallower waters along the shore of the ocean.

Many fish are found in the shallow ocean waters. Among them are cod, mackerel, halibut, and herring.

Review of Sections 36 to 43.—1. In what ways do rivers begin? 2. What is ground water? 3. How are wells made? 4. What are springs?

5. What is a river system? 6. What is a main stream? 7. What are tributaries? 8. Where do streams flow rapidly and cut deep, narrow valleys? 9. What is the difference between a waterfall and a cascade? What are rapids? 10. What food do we sometimes get from rivers? 11. Where are salmon caught?

12. What is a swamp? 13. How is a lake formed? How may a lake basin become dry land?

14. How much of the earth's surface is covered by the ocean? 15. How may we get an idea of its size? 16. How are waves formed? Currents? 17. What is an island? Peninsula? Cape? Isthmus? Sea? Gulf? Bay? Strait? 18. In what parts of the ocean are many fish caught? 19. Name some important kinds of fish. 20. Where are oysters and clams found?

MANUFACTURING

44. The Changing of Raw Materials.—The industries that we have been studying are those by which we get most of the things or materials that we use for food, clothing, and shelter. A few of these different materials can be used in the form in which we find them. Most of them, however, must first be prepared in some way before they are used.

Wheat is crushed into flour, and the flour baked into bread. The wool cut from sheep is cleaned, spun into yarn, woven into cloth, cut into proper shape, and made into clothing. Iron ore dug from the ground is smelted in a furnace, and the iron is made into stoves, beams,

Fig. 66. In a steel mill. A ladle of molten steel is being run into forms to cool. Steel is a kind of iron

bars, or nails. The logs cut from forest trees are taken to the mills and sawed into lumber, which is dried and finally made into articles that people need. The wheat, the wool, the iron ore, and the timber are *raw materials*. The process by which raw materials are made into things that people want is called *manufacturing*.

Fig. 67. Weaving cloth in a cotton factory

The first settlers in this country made in their own homes most of the things that they needed. Now the farmer gives his time to farming, the miner to mining, the lumberman to lumbering, and the manufacturer makes things for them all. In order to do this he must obtain a large amount of necessary raw material. The milk from many farms is needed to make enough butter or cheese for our people. The wool from very many sheep is needed to make the yarn that is woven into cloth.

The products of agriculture, mining, and lumbering are raw materials which must generally go through the process of manufacturing before they are ready for man's use. Not many years ago much manufacturing was carried on in each home. Now most people give all of their time to their special work.

45. Locating Factories.—Most manufacturing is carried on in large factories where the greater part of the work is done by machinery (Fig. 67). Many factories are located near the raw materials that they use, but this is not true of all of them. There are other things also that must be thought of when factory sites are chosen.

A factory must have power, or a force to make its machinery go. Wheels turned by falling water give enough power to run the machinery of a small factory or mill. In large factories, such as the one shown in Figure 3, where many men and women work, the power is furnished by large waterfalls or by great steam engines run by burning coal. The location of many factories has been chosen because of a waterfall or a coal mine near at hand to furnish the power. But by the use of electricity, power can be carried and used many miles from the place where it is developed.

Not only must a factory have the raw material to manufacture, and the power to run the machinery, but it must also have people to do the work. Manufacturing is carried on best where there are many people who have learned how to use machinery.

After the raw materials have been changed by manufacture into useful or beautiful things, the manufactured goods must be sold. When possible, factories are located near the people who will use the goods made, for the goods will then not have to be carried a long distance to their market.

In deciding where to build a factory the manufacturer must think of where he is to get his raw material, his power, and his labor, and where he can sell the manufactured goods.

Review of Sections 44 and 45.—1. What industries furnish the materials used for food, clothing, and shelter? 2. Are we able to use many of these materials in the condition in which we find them? 3. Name a few raw materials. 4. What do we call the process by which they are prepared for use? 5. Where did the early settlers in this country get the things they needed? 6. Where are such things made now?

7. What is a factory? 8. What must a factory have? 9. How may this be furnished? 10. Why are factories located where there are many people?

Fig. 68. Interior of a department store

COMMERCE

46. Trade.—Two important industries have not yet been studied. They are *trade*, or the buying and selling of goods, and *transportation*, or the carrying of goods and people from one place to another. Together they are called *commerce*.

In other parts of the world, people are at work as we are in our own country (Sec. 6). They are raising food in their fields, digging coal and ores from their mines, catching fish in their lakes and rivers, and manufacturing in their factories. We find in our stores (Fig. 68) many things that have come from far-away countries. How do they come to be here? Of course some one bought them in the country from which they came, and sent them to our country. They were probably bought and sold several times before they reached the store where we found them.

Fig. 69. A crowded city street

The traders that we know best are the men who keep the stores, but there are many others whom we do not know. Some of them travel to distant parts of the world to buy things that cannot be found nearer home.

Trade and transportation make commerce. Men travel to all parts of the world to buy goods, which finally reach the stores where we buy them.

47. Transportation in Cities.—In great cities many goods have to be transported, and thousands of people must walk or ride from one part of the city to another (Fig. 69). For this reason many wide streets are necessary. The streets of a large city may cover an eighth, or even a fourth, of the whole surface. They divide the city into *blocks*, on which are the houses, stores, and other buildings.

In the business districts the larger buildings are many stories high (Fig. 70), and hundreds of people are at work in them. Even in parts of a city where people have their homes, the buildings are large and crowded close together, and many people live in a small space.

Most of the workers in the business districts live in other parts of the city, and thousands ride to and from their places of business. In some streets there are tracks in the center for street cars, and spaces on each side for wagons and automobiles. In front of the houses and business places there are wide sidewalks.

In very large cities some of the streets are not wide enough for all the traffic. *Elevated railways* have been built above them (Fig. 71), and *subways* for electric railroads have been dug underneath them (Fig. 72).

Fig. 70. A high office building, on Broadway, New York

Most city streets are *paved*. If this were not done, they would be very dusty when the weather is dry, and muddy when it is wet. In paving a street, a layer of broken stone or gravel mixed with cement is first put in as a foundation. On top of it blocks of wood, stone, or brick are laid for a pavement. The top layer is sometimes made of asphalt (Fig. 101), a thick, gummy substance that hardens when cold.

In the smaller cities and country villages not all of the streets are paved, and there are few street cars. The sidewalks are narrower. The houses are not so close to each other as in a great city, so that there is more open space.

In cities the buildings are in blocks, with streets between. Most of the streets are paved, and on some of them are street car tracks. A few large cities have also elevated railways and subways.

Fig. 71. An elevated railroad

Fig. 72. Subway train and station platform © Fulliis

U.S. Bureau of Public Roads

Fig. 73. An unimproved country road

U.S. Bureau of Public Roads

Fig. 74. The same road after improvements were made

48. Transportation in the Country.—In the country there are fewer people and not so many goods to be transported. Paved streets and broad sidewalks are not needed. Roads are necessary, for the products of the farm must be taken to market, and the farmers must be able to get their supplies. But in the country the roads occupy only a small part of the land.

Some years ago most of our country roads were poor. They were muddy when it rained, and dusty when it was dry. Now good roads are being built in country districts. Usually the surface dirt is removed and the slope, or *grade*, made easier by cutting away the tops of hills and filling the deeper hollows. A new surface is then made of concrete, brick, broken stone, or gravel. Roads made from broken stone or gravel are packed and leveled by heavy rollers, and tar or a cheap black oil is sometimes added to keep down the dust. On such good roads automobiles and trucks may be easily used. Horses can also draw much heavier loads than on poor roads (Figs. 73, 74).

In mountain regions, in swamps, and in great forests, travel and the transportation of goods are always difficult and often dangerous. On many of the steep mountain slopes, only narrow paths, or *trails*, have been constructed. Over these trails everything must be carried on men's backs, or by sure-footed donkeys or other animals that have been trained for the work.

Not so many roads are needed in the country as in the city. Many of the old dirt roads have been improved by making the grades easy and putting down a hard surface. On the trails in mountain regions or dense forests, goods must be carried on the backs of men or animals.

49. Transportation by Rail.—The most important of all the ways in which people travel and goods are transported on land, is by the railroad.

In some parts of the country electric railway lines are used to transport both passengers and goods. More and more of these are built each year, especially in rich farming and suburban districts where it pays to run the cars frequently.

The steam railroads in our country are the longest and best in the world. By traveling several days and nights a person can go entirely across the country with but a single change of cars. On some trains there are "sleeping cars," in which the seats used during the day are made up into beds at night. There is also a dining car in which meals are cooked and served. Such trains stop only at the most important places. They are called

Fig. 75. A fast express train on one of the great railroads in the eastern part of our country

express trains, while those that stop at the smaller stations are called local trains.

The transportation of goods, or freight, is a very large part of the railroad business. So important has the carrying of freight become that a variety of special cars have been built, such as those used to carry coal, petroleum, live cattle, meat, fish, and fruit.

In order that trains may be hauled easily, it is necessary to make the tracks as nearly level as possible. For this reason most railroads have been built through river valleys and on river flood plains. In the more open areas of the great plains, railroads are built in nearly straight lines. Even here, however, some curves are made in order to reach the rivers at the best places for building bridges. In the mountains only a few valleys can be used, and the tracks are therefore very winding. The grades are steep and the trains wind slowly up the mountains. In climbing a mountain, a heavy train may be divided into two parts, each pulled by two heavy engines. In some mountain regions, sheds have been built over the tracks to protect them from falling or sliding snow, and tunnels have been dug to avoid a part of the climb.

Passengers and freight are carried rapidly on land by the railroads. On the best trains passengers can travel long distances without changing cars; they eat and sleep on the train. Trains are most easily hauled over level tracks.

50. Transportation through the Air.— Two kinds of flying machines are in use. One, the airplane (Fig. 76), is heavier than the air. It rises from the ground only when its machinery is in motion. Most airplanes carry only one or two passengers, although many larger ones have been built. They are used for pleasure flying and for speedy transportation of mail, freight, and passengers.

Fig. 76. An airplane, the "NC4," which flew across the Atlantic Ocean in 1919

Another kind of airship is lighter than the air, like a balloon. It is called a dirigible because it has machinery by which it can be made to go where the operator wishes. Dirigibles like the one shown in

Figure 77 carry a number of passengers and stay in the air for several days at a time. Under the long gas container that supports the dirigible are cabins with seats for the passengers. In recent wars some dirigibles and very many airplanes have been used for scouting, bombing, and fighting.

Flying machines are expensive. Their use in commerce is small but increasing.

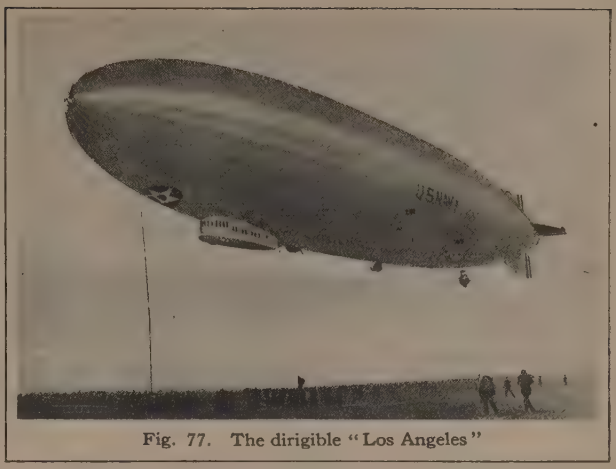

Fig. 77. The dirigible "Los Angeles"

51. Transportation by Water.— One of the easiest and cheapest ways of transporting goods is by water. Boats do not move so rapidly as trains, but one large boat can carry as much freight as several trains. Wherever transportation by water is possible it is the first method to be used in a new country, because rafts and boats can be built more easily than roads. Steamships (Figs. 1, 81) carrying both passengers and freight are in use on the ocean and on many great rivers and lakes.

In some rivers, however, there are waterfalls or rapids over which vessels cannot go. Broad and deep ditches, or *canals*, have been dug around many of these, with *locks* to raise and lower boats from one level to another. The water in the upper level is held back by gates at both ends of the lock. One gate or the other is always closed. A boat on the lower level enters the lock, the lower gate is closed behind it, and water is admitted to the lock (Fig. 78), lifting the boat to the upper level. Then the upper gate is opened and the boat moves on. Many rivers have been deepened and improved in other ways so that boats can be used on them.

Fig. 78. A lock on the Panama ship canal

Long canals have been dug across the land so that loaded boats or ships can pass from one river, lake, or other body of water to another. As the water in canals must be kept nearly level, it is necessary in some places to cut through small hills or to build high banks.

On the smaller canals, boats are pulled, or *towed*, by horses or mules walking on a road, or *tow path*, on one side of the canal. Other canals have been made so wide and deep that good-sized steamboats can be used on them. A few canals are large enough for large steamers; they are called *ship canals*.

Fig. 79. Part of a breakwater

Transportation on rivers, lakes, and oceans is usually cheaper, though slower, than transportation by rail. Many canals have been constructed around the falls and rapids of rivers, and across country to connect rivers, lakes, and oceans.

52. Ocean Commerce and Seaports. —The greatest of all the world's highways is the ocean. In the far north and the far south its waters are frozen, but over the rest of its surface great ships can safely come and go. Every year, thousands of people go back and forth between our own country and the lands beyond the ocean. When the ships leave our shores, they carry goods that we are sending to other countries. When they return, they carry goods that other countries are sending to us. There is so much travel and trade that there are always thousands of ships moving across the ocean or along the coasts.

Much of the ocean trade is carried on by a few important countries and through a few *seaport* cities. These have grown up in places where the water near the shore is deep enough to float the ocean steamships. They are at or near the mouths of great rivers, or where a bend in the coast has partly surrounded some deep water to form a bay. Such river mouths and bays are safe *harbors* because the ocean waves are shut out and the ships find good places in which to anchor and load or unload goods.

Where there is no good natural protection for ships, a shallow harbor may be deepened, or an artificial harbor may be made by building stone walls, or *breakwaters* (Fig. 79). In most harbors, *piers* or *wharves* have been built where ships receive and land their passengers, and load and unload their freight (Figs. 1, 80).

In every large harbor there are many powerful little tugboats, which help large steamers to enter and leave their *docks*, as the space between the wharves is called. In some harbors many of the boats to be seen are wide, clumsy-looking ferryboats, used in carrying passengers, wagons, automobiles, and even railroad trains across a wide river or bay.

© Detroit Photographic Co

Fig. 80. Some of the wharves of the harbor of New York

Fig. 81. A large ocean steamer, 882 feet long

Many of the largest cities of the world have grown up where there are fine harbors on the seashore, or where deep rivers enable ocean steamers to reach their wharves. All the important seaports are located so that freight and passengers can be easily transported to and from the interior of the country.

Only a very few ports have water deep enough for such large ocean steamers as the one shown in Figure 81. Nine hundred men are needed to do the work on this ship. It carries more than two thousand passengers, and it requires many thousands of tons of oil on every trip to drive it across the ocean. It moves through the water at the rate of twenty-five miles an hour. Not all ocean-going ships are large, and not all of them are steamships. A few great sailing ships are still in use, but the larger sailing ships have engines that they can use when the wind is not blowing. The small ships make only short journeys along the coast.

Much of the commerce of the important countries of the world is carried on across the ocean. Large cities have grown up at the ports where goods are transferred from cars to ships.

53. Protection against Dangers to Navigation.— On the open ocean there is little danger to ships except from fogs and from violent storms. During such storms great waves toss the smaller ships about, sweep over them, and sometimes wreck them. During a fog, if the sailors are not careful, even the largest vessels may be wrecked by collision with another ship or with an iceberg.

Navigation along the coast is much more dangerous than on the open ocean. There are hidden rocks and reefs, as well as shallow places, that ships must avoid. In fair weather, with clear skies, the officers of a ship can tell, by means of instruments, just where they are, from the position of the sun or stars. It is then easy to follow certain ocean routes. During fogs and storms, ships may drift, or be driven, far out of their courses. In most countries, to guard against dangers along the coast, *lighthouses* (Fig. 82) are built on capes or islands. The lights in the lighthouses are of different colors, or the light is made to flash in different ways, so that the officer of a ship, as soon as he sees a light, can tell where his vessel is, and what danger he must avoid.

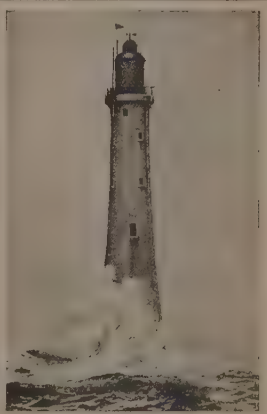

Fig. 82. Lighthouse

In some dangerous shallow places, where it has not been possible to build lighthouses, *lightships* are anchored. They have tall masts on which lights are hung.

Fig. 83. Bell buoy

In order to avoid sand bars or rocks, most of the great harbors of the world must be entered through narrow channels. Low iron *buoys*, similar to the one shown in Figure 83, are placed along each side of such channels. These buoys are firmly anchored to the bottom, and many of them carry lights that can be seen at night. Others are so constructed that they whistle or ring a bell as the waves move them.

U. S. Post Office

Fig. 84. Sorting mail in a mail car

Many harbors at the mouths of rivers must be dredged frequently in order to take out the sediment that is being deposited. At the entrance to a harbor the waves sometimes shift the sand bars about and obstruct the channel, which must then be cleared again.

In the more important harbors, only *pilots* who know its channels are allowed to steer ships in and out.

Dangerous places along the coast are marked by lighthouses or lightships. The channels that lead into harbors are shown by buoys. When necessary, harbors and channels are dredged to keep them from filling with sediment or sand.

54. Aids to Commerce.—Among the important aids to commerce are the mails, the telephone, and the telegraph.

The mails are carried on the fastest trains and the swiftest steamships. As soon as the mail is put on board, clerks begin to sort it (Fig. 84) and put it into bags, so that it can be left at the proper stations or ports. Letters that do not weigh more than one ounce are carried anywhere in our country for two cents, and between our country and other countries for two cents or five cents. It is possible also to send parcels by mail (Fig. 85). This part of the postal service is called the *parcel post*. Messages sent by mail are slower than those sent by telephone or telegraph, but the cost of sending them is much less.

U. S. Post Office

Fig. 85. Automobile delivery, for parcel post packages

By means of the telephone one can talk with another person at a distance almost as well as if both were in the same room. For this reason telephones are in use in business places and in many homes.

Fig. 86. Wireless telegraph station. Part of the apparatus needs to be high in the air

Messages can also be sent quickly by telegraph. The message is sent from one telegraph office to another, and is then delivered to the person to whom it is addressed, either by telephone or by messenger.

Most telegraph and telephone messages are sent by means of wires, which stretch across the country on poles or are hidden under city streets in pipes or *conduits*. By means of cables, also, we can telegraph across the ocean. These submarine cables are made of a number of wires twisted together. They rest on the bottom of the ocean, to which they are lowered from ships.

Some telegraph and telephone instruments work without connecting wires (Fig. 86). By their use messages are sent through the air, over land, across the ocean, between ships at sea, and between ships and the land. Ships meeting with accidents at sea send wireless messages to other ships asking help to save the lives of their passengers and crews.

In commerce it is necessary for people to send frequent messages to one another. The mails will carry a message in a few hours or days or weeks; but to those who can be reached by telephone or telegraph, a message can be sent in a few minutes.

Review of Sections 46 to 54.—1. What is commerce? 2. Name some persons you know who are engaged in trade. 3. What is transportation?

4. How are buildings and streets arranged in a city? 5. For what are city streets used? 6. Why is it necessary for many people to ride to and from their work? 7. How are they carried? 8. What is done to prevent dust and mud in city streets?

9. What kinds of roads do we find in the country? 10. How are good country roads made? 11. Why are they better than dirt roads? 12. How are goods transported along mountain trails?

13. Name two kinds of railways. 14. What are sleeping cars? Dining cars? 15. Where are they used? 16. What are express trains? Local trains? 17. What special kinds of freight cars do you know about? 18. Why are railroad tracks made as nearly level as possible? 19. Why are tunnels built? Snowsheds?

20. What two kinds of machines are used for transportation through the air?

21. What method of transportation is cheaper than by rail? Why? 22. How do boats pass waterfalls and rapids in rivers? 23. Where are long canals dug? 24. How are canal boats moved? 25. What are locks, and how are they used? 26. What are ship canals?

27. What is the greatest of all the world's highways? 28. Where have the great seaports grown up? 29. What are harbors? 30. How are they sometimes made? 31. How large are the great ocean steamers? 32. How fast can they go?

33. What are the dangers to navigation along seacoasts? 34. How are ships' officers warned of such dangers? 35. Where are lighthouses usually built? 36. Where are lightships anchored? 37. What are buoys, and how are they used? 38. When harbors are made too shallow by sediment from rivers, what is done? 39. Where are pilots employed, and what do they do?

40. Name three aids to commerce.

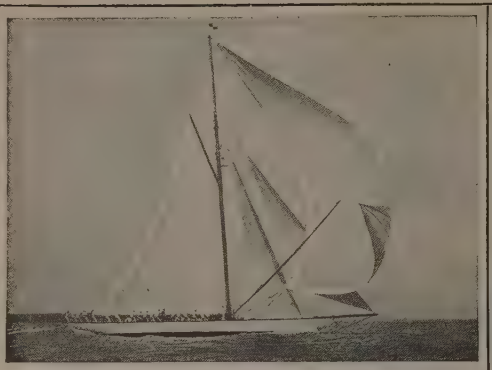

Fig. 87. The wind is blowing against the sails

Fig. 88. Wind blowing smoke

from the streets, and leaves and lighter seeds from plants in the fields. It moves sailboats (Fig. 87). It sets the branches of trees in motion, and carries away the smoke that rises from chimneys (Fig. 88).

When it moves very rapidly, it may tear up trees and overturn and destroy buildings. Sometimes whole villages have been destroyed in this way.

Air moving so rapidly that it can be felt, is called *wind*.

The wind does much important work. On lakes and on the ocean it blows against the sails of ships and drives them along (Fig. 87). It turns the great arms of windmills, which many farmers use to pump water from wells (Fig. 89). It blows the impure air out of the rooms where people live and work, and leaves fresh, pure air in its place. It carries away the smoke and dust of cities, and leaves behind clean air that is much better for the people to breathe.

As we have already learned, the wind causes waves and ocean currents (Sec. 41).

The air cannot be seen, but when it is in motion, we see and feel its effects. The wind turns windmills, moves sailing vessels, and brings fresh air to houses and workshops.

THE ATMOSPHERE

55. The Air Supports Life.—Surrounding the earth on which we live, and extending many miles above us, is a great body of air, called the *atmosphere*.

Plants and animals cannot live without air. We breathe it all the time, even when we are asleep. In breathing, the air is drawn into our lungs, where part of it is taken into the blood. Plants and animals that do not have plenty of good air soon sicken and die. Human beings can live only a very few minutes without air.

The earth is surrounded by the atmosphere. Air is necessary to life.

56. The Wind and its Uses.—When the air is not moving, we do not often think of it, in spite of its importance. If we run, however, it seems to blow against our hands and faces and to brush the hair back from our foreheads.

When the air is moving, we can see the effects of its movement. It picks up dust and bits of paper

Fig. 89. Windmill

57. Cause of the Winds.—When any part of the atmosphere is warmed it becomes lighter. The colder and heavier air will then move under the warm air and push it up. On a still, cold day this can be shown by the movement of the air in a warm room when a window is opened at top and bottom. The cold air comes into the room through the lower opening and pushes under the warm air. The warmer air in the upper part of the room flows out through the upper opening (Fig. 90). The direction in which the air moves can be shown by holding a light handkerchief in front of the window openings. At the lower opening the handkerchief will blow into the room. At the upper opening it will blow out of the room.

Fig. 90. The moving air blows the handkerchiefs

The air outdoors is warmed or cooled by the surface of the earth, which receives heat from the sun. Some parts of the earth are warmer than other parts; and the uneven warming of the atmosphere causes winds that blow over the earth's surface from the colder to the warmer regions. The land is often warmer than the ocean during the day, and the winds move in from the ocean over the land. The land is usually cooler than the ocean during the night, and the wind then moves the other way. The great winds of the world, however, blow long distances, and in directions that are influenced by several other causes besides the uneven warming of the earth's surface.

As warm air is light, and cool air is heavy, winds move over the surface of the earth from cooler to warmer regions.

58. Water Vapor and the Moisture in the Air.—When clothes that have just been washed and are still wet, are hung out of doors on a bright day, they soon dry. When a basin of water is left uncovered and undisturbed for a few days, the water disappears. What becomes of it? In very small particles, so small that they cannot be seen, the water passes into the air and becomes a part of it. This change goes on more or less rapidly wherever the surface of the earth is damp, but especially from bodies of water. Water in the form of separate particles so small that they cannot be seen, like air, is called *water vapor*. Such particles may unite to form tiny drops of water that can be seen, but are still so very small that they float in the air, forming clouds, fog, or mist. Most of the water vapor in the air comes from the ocean. Such vapor may move, in winds, far over the land.

Heat causes water to become water vapor. When water is boiled, it changes to vapor rapidly. If a teakettle containing water is left over the fire until the water boils, a cloud of "steam" will be seen coming from the spout of the kettle. The "steam" that can be seen, however, is a cloud of tiny drops of water: it is not the water vapor of which we have been speaking, for water vapor cannot be seen.

Fig. 91. Steam from a kettle

Look closely at the end of the spout. Between the end of the spout and the cloud of "steam" there is a clear space where nothing can be seen. The water vapor or steam is really passing through this space, but it is invisible. As it cools it changes into a visible cloud of "steam." Later this disappears because it mixes with the air and becomes water vapor again.

Warm air can contain more water vapor than cold air. Anything that warms the air makes it possible for it to contain more water vapor. When water is changed into vapor, we say that it has been *evaporated*. Anything that cools the air may cause it to lose some of its moisture. When vapor changes to water again, we say that it has been *condensed*. There is moisture in our breath, and if we breathe against a cold window pane, a thin coating of moisture is condensed on the glass. When the air is warm and damp, or *muggy*, the moisture in it will condense on the side of a glass or pitcher containing ice water.

There is much invisible water vapor in the air. It comes from the evaporation of water from the soil and from water surfaces. Most of it rises from the ocean. Much vapor from the ocean is swept over the land by the winds.

59. The Forms in which Moisture Condenses.—You have already learned that mountain tops are colder than their lower slopes (Sec. 25). When the warm air from the surface of the earth is pushed up to higher levels it becomes cooler. The vapor it contains is condensed and begins to form *clouds*. At first these may look like great white mountains (Fig. 92), but with further condensation they grow black and heavy, and *rain* begins to fall. Some of the vapor rising from the ocean condenses and falls back into the ocean. That which falls on the land may be evaporated again, or it may be used by plants and animals, or it may sink into the ground, or run over the surface in brooks and rivers.

All life depends upon the presence of moisture on the surface of the earth. Where there is no moisture, there can be no plant life, and without plant life no animals or human beings can live.

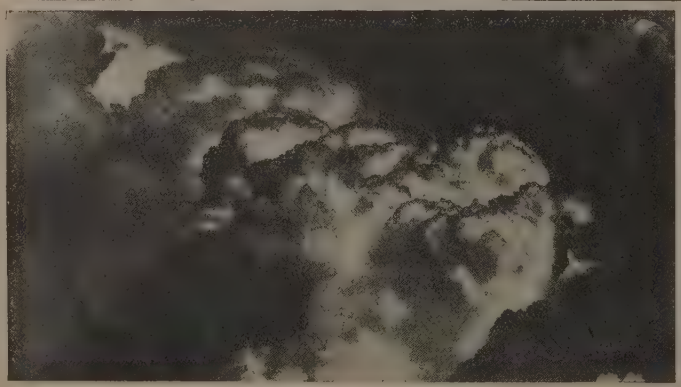

Fig. 92. Clouds, formed of small particles of moisture

Sometimes the warm air of the plains is forced up the sides of mountains; as it becomes cooler, the vapor is condensed as rain or snow. The side of a mountain against which the wind blows, or the *windward* side, is the side that gets the moisture. The opposite,

Fig. 93. Clearing the snow drifts from a railroad track

or *lee*, side of the mountain is often left almost without moisture.

Moisture condensing close to the surface of the earth forms *fog*. Fogs over the ocean make navigation dangerous (Sec. 53). Water vapor at the surface of the earth often condenses during the night into drops of *dew* and makes the grass wet. If much moisture is condensed in the air when the temperature is below freezing, it falls as *snow* (Fig. 93). If moisture is condensed at this temperature at the surface of the earth, it becomes *frost*.

Moisture may be condensed as clouds, fog, rain, snow, dew, or frost.

60. The Weather.—When we speak of the *weather*, we mean the condition of the atmosphere at the time as warm or cold, wet or dry, clear or cloudy, windy or still. People learn a great deal about the weather of the place where they live. They know which winds bring rain and which winds bring fair weather. They learn when to expect the warm days and when to expect the cold. Persons who work out of doors pay much attention to the weather. Farmers wait for good weather before planting or harvesting their crops. When a dangerous storm is expected small ships do not leave port.

The weather is so important to farmers, sailors, and many others that our government sends out weather reports every day, telling what the weather is likely to be the next day (Fig. 94).

Notice the weather for a few days and tell whether it is wet or dry; hot, warm, cool, or cold. Read the weather reports if you can get them.

Review of Sections 55 to 60.—1. What is the atmosphere? 2. How great is its extent? 3. What would happen to plants, animals, and human beings if there were no air?

4. How can we prove that there is air when it is not moving? 5. When air is moving what are some of its effects? 6. What work does the wind do? 7. What causes winds?

8. How do we know that air takes up water vapor? 9. What is evaporation? 10. Which takes up more vapor, warm air or cold air? 11. What happens when warm air containing much vapor is cooled? 12. How does it happen that vapor evaporated from the ocean is condensed over the land?

13. When condensation begins at some distance above the ground, what form does the water vapor first take? 14. What happens if condensation continues? 15. Where does the rain fall? 16. What causes snow? 17. How do mountains get their moisture? 18. Which will be the dry side and which the rainy side of mountains? 19. What causes fog? Dew? Frost?

20. What is meant by weather? 21. Why does our government send out daily weather reports?

U. S. Department of Agriculture, Weather Bureau
Local Office, New York, N. Y

WHITEHALL BUILDING — 17 BATTERY PLACE — THURSDAY, DECEMBER 10, 1914

Highest yesterday, 36° — FOR NEW YORK CITY AND VICINITY — Lowest last night, 29°

Unsettled to-night and Friday, probably snow flurries. Probably colder Friday. Moderate winds mostly northerly. Minimum temperature to-night about 26 degrees.

Eastern New York: Snow to-night and probably Friday. Moderate variable winds.
Eastern Pennsylvania and New Jersey. Unsettled to-night and Friday, probably rain or snow. Moderate variable winds.
Connecticut: Cloudy to-night and Friday, probably snow. Fresh northeast winds.
Steamers departing to-day for European ports will have fresh east winds and overcast weather and snow and rain to the Grand Banks.
Northeast storm warnings are displayed on the New England coast from Boston to Block Island.

Fig. 94. Weather report, in card form

GOVERNMENT

61. The Need of Government. — Wherever people live or work near one another, it is necessary to have rules, or *laws*, so that each person may know what is right for him to do and what is wrong. That is the reason why, in your home, you have fixed hours for meals, for bedtime, and for getting up in the morning. In school also there must be rules. They tell what time to begin work in the morning and when to close in the afternoon; and there are rules about being tardy, about learning lessons, about recess, and about many other things.

At home your parents make the rules and see that you obey them. At school it is the teacher who tells you what the rules are and what you are to do.

There are also many rules or laws that must be obeyed by your parents, your teachers, and all other people. For example, when two persons meet in walking or riding or driving, each must, if necessary, turn out to the right. Another rule forbids anybody to drive an automobile too rapidly through a city street. Stealing is forbidden as a crime, for which one may be sent to prison or to a reformatory.

Who makes such laws as these, which must be obeyed by all the people? In our country they are made and enforced by many officers who are elected by the people. Some elected officers appoint other officers to help them. All the officers together are sometimes called the *government*. The same word, *government*, may mean also the work done; that is, it may mean the making and enforcing of laws.

A government is needed to make and enforce laws, and thus to prevent one person from injuring another. In our country the government is controlled by the people.

Fig. 95. One corner of a city park

62. Local and State Government. — The officers of a city make some rules that must be obeyed in that city, and they also do much important work for the benefit of all. They lay out new streets and parks (Fig. 95), and attend to such things as lighting the streets, providing a city water supply, and building schoolhouses.

The chief officer of a city is called the *mayor*.

Fig. 96. A state capitol

Our country is divided into forty-eight parts called *states*, and each state has a government made up of many officers. It is this state government that makes most of the laws which must be obeyed by all the people of the state.

This government divides the state into counties and other districts, and decides what officers shall be elected in each of them, and what work they shall do. It makes general rules for the control of city governments. It decides how the schools shall be managed, and how long they must be open each year; and it provides for the restraint of criminals and for the care of the deaf, blind, and insane.

The laws in each state are usually made by men elected for that purpose and called the *legislature* of the state. In some states, however, the people themselves can make laws, by proposing them and voting for them at elections. The chief officer of the state, who sees that the laws are enforced, is called the *governor*. Officers who try criminals and decide disputes are called *judges*.

The legislature meets in a city, called the *capital*, which usually can be reached easily from all parts of the state. In this city is erected a fine building called the state *capitol* (Fig. 96), in which the legislature meets, and in which other state officers have their offices.

What is the name of the state in which you live? Who is now the governor of your state? What city is the capital?

Most of our laws are made by the state legislatures. County, city, and other local officers do much of the work of government, but they are controlled by the state. The most important state officer is the governor.

Fig. 97. The United States Congress. The President is reading a message to Congress

63. The United States Government. — Representatives are sent from the different states to the city of Washington, which is the *national capital*, to form a national Congress that makes laws for the whole country (Fig. 97). The highest officer of the national government is the President, who is elected every four years. It is his duty to see that the laws of the nation are enforced, and he appoints many officers to help him in his work.

The United States government cares for matters that are of importance to the people of the whole country. It carries on war when necessary (Fig. 98). It sees that mail is carried from place to place, that harbors and rivers are improved, that lighthouses are built, and dangerous rocks and shoals located and marked (Sec. 53). The government also gathers information about the weather and sends it out to the people. It coins or prints money, and regulates commerce between the states.

The states in our country are united to form the national government, or the government of the United States. The

Fig. 98. United States soldiers (artillery) on parade *U. S. War Department*

Fig. 99. Police on parade

Fig. 101. Paving a city street with asphalt

chief officer is the President. The President lives in Washington, and Congress meets there. The national government issues money, carries the mail, and does other things to help industry. It takes charge of many matters of interest to the people of the whole country.

64. The Influence of Government on Industry. — In the country districts, there are officers who protect the lives and property of the people. Other officers have charge of the roads. Others see to it that the people fence their pastures to keep their animals from doing damage to the property of other people.

In cities, the homes and stores are protected from thieves by policemen (Fig. 99), and from fire by firemen (Fig. 100). The streets are paved (Fig. 101), lighted, and cleaned. Fresh, pure water is carried through pipes under the streets to the houses and factories, and waste is carried away in sewers. All of this work is done under the direction of the city government.

Fig. 100. Fighting a fire on a cold day

In the state, the laws set the time when fish and wild animals may be caught or hunted. Many states have laws requiring that milk, butter, eggs, meat, and other foods be clean and of good quality. Other laws control the work and the charges of railroad, telephone, and lighting companies. Some states have constructed canals and state roads to aid and cheapen transportation.

Some of the ways in which the national government aids business have already been mentioned (Sec. 63). It has also helped in the building of railroads, and has given away much public land to settlers.

Large sums of money have to be spent every year in doing the work of local, state, and national governments.

Salaries must be paid to officers, and the governments must buy many things.

The money is raised by taxes. That is, persons are required by law to pay to the government certain sums of money. The amount that each must pay depends upon what his business is, and upon how much property and how much income he has.

In country districts, as well as in cities, states, and the nation, the government does many things to help people in their work.

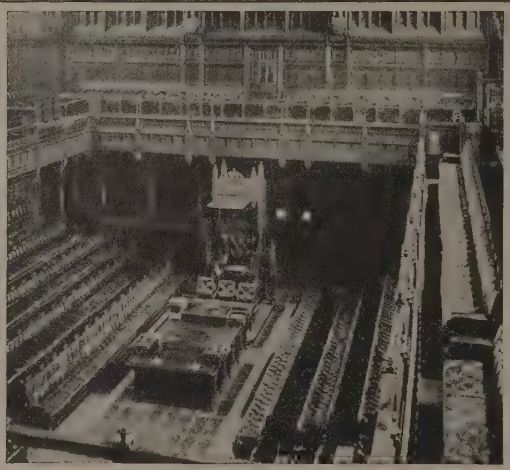

Fig. 102. Meeting place of the lawmakers of Great Britain, a limited monarchy

65. Government in Other Countries. — In some of the other countries of the world, as in ours, the chief officers of the government are chosen by the people, at elections. Such a country is called a *republic*.

A *kingdom* is a country whose highest officer is a king. He holds his place as long as he lives. When he dies, the people do not elect a new king. Instead, the office belongs to the king's oldest son, or other near relative.

An *empire* is formed by uniting several countries under one ruler, whose office descends from father to son like that of a king. The ruler is often, although not always, called an emperor.

A *monarchy* is any government under a king, emperor, or other ruler who holds his office by right of birth. Kings and emperors at one time had much more power than they have now. They made the laws, appointed the other officers, and governed as they pleased. Such a government is called an *absolute* monarchy.

In nearly all monarchies at present the people have a share in the government, especially in electing lawmakers. Such a government is called a *limited* monarchy, because the ruler's powers are limited.

A republic is a country governed by officers who are elected by the people. A monarchy is under a king or emperor who inherits his office and rules for life. In a limited monarchy, however, the people have a share in the government.

Review of Sections 61 to 65. — 1. Why is it necessary to have rules or laws? 2. What rules do we have at home? In school? 3. Who sees to it that we obey the home rules? The school rules? 4. What is meant by government? 5. How are officers chosen in our country?

6. What kind of work is done by a city government? 7. How many states are there in our country? 8. What does a state government do? 9. Where does a state legislature meet? 10. What is the chief officer of a state called?

11. What is the name of the national capital? 12. What is the name of the national body of lawmakers? 13. Who is our President now? 14. What does the United States government do?

15. How do the laws help the people and their industries in the country? In the city? In the state? In the nation? 16. Why is money needed in order to carry on any government? 17. How is it raised?

18. What is a republic? A kingdom? An empire? A monarchy? 19. What is the difference between a limited and an absolute monarchy?

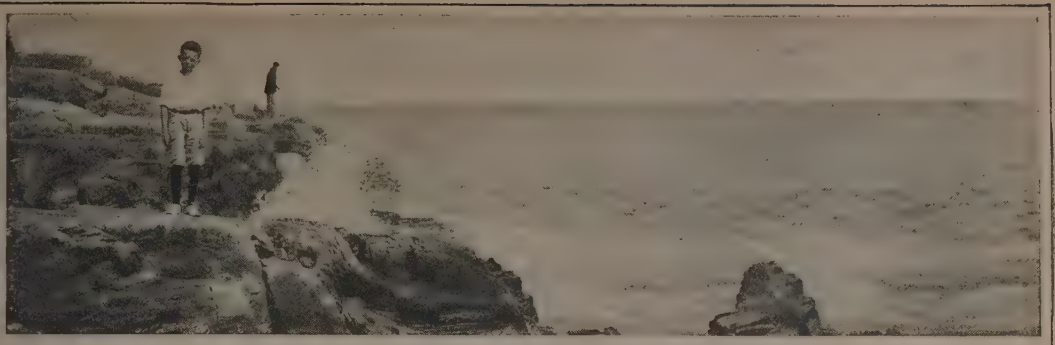

Fig. 103. The horizon, where the sky and sea seem to meet

THE EARTH AS A WHOLE

(If required by the local course of study Sections 66–83 should be deferred till the time prescribed in the course.)

FORM AND ROTATION OF THE EARTH; FINDING DIRECTIONS

66. What we See of the Earth.—Wherever we may happen to be, we can see only a small part of the land and water that make up the surface of the earth.

From the shore of the ocean or of a great lake, we can look far over the surface of the water to where the sky seems to bend down to meet it. The surface of the water seems almost level, and the sky looks like the inside of a great bowl that has been turned over it. The line where the earth and sky seem to meet, surrounds us in a great circle and is called the *horizon* (Fig. 103).

In a country where there are no hills or mountains, the land seems to stretch away to the horizon as a level plain.

In a hilly or mountainous country, when we stand on a high hill we can see much further than we can from a plain. Even then the horizon always surrounds us.

We can see only a small part of the earth at a time. The earth and sky seem to meet at the horizon.

67. The Size of the Earth.—A great many persons have traveled over the surface of the earth, and from them we have learned many things about it. We know that it is made up of land and water, and that there is much more water than land. There are many islands in the great ocean, but most of the land surface is in seven great masses called continents.

The continents are very large, so large that at their broadest parts it would take a man many weeks to walk across them. If a man could walk all the way around the earth at the rate of thirty miles a day, the journey would take more than two years.

The earth is nearly 25,000 miles around. Almost three fourths of its surface is made up of the waters of the great ocean. The rest is land, and most of the land is in seven continents.

68. The Form of the Earth. — Although the earth is very large and only a small part of it can be seen at a time, people have learned its shape. It is round like a ball. We may take a ball, or sphere, to represent the earth, and on it we may

Fig. 104. Western Hemisphere

Fig. 105. Eastern Hemisphere

mark the parts of the earth's surface that are land. Figures 104 and 105 show opposite sides of a ball, or globe, marked in this way. Notice how much more water there is than land. Ask your teacher to show you, on your schoolroom globe, the spot that represents the place where you live. Put your finger there, and then move it around the globe. You see how people may travel "around the world."

Five hundred years ago most people knew only a small part of the earth, and believed it to be flat. One of the men who helped to explore the other parts of the earth was Christopher Columbus (Fig. 106). He believed he could reach India by sailing toward the west; and in 1492 he persuaded the queen of Spain to help him. Locate Spain and India on the globe. Columbus sailed from Spain across the ocean about where the broken line is drawn in Figures 104 and 105. He believed the earth to be round, but he thought the distance to India much shorter than it really is, in the direction he traveled. Why did he not reach India? What body of land did he come to instead? Columbus never got beyond the land which people later called *America*, or *the New World*, but he died believing that he had reached a land near India.

Fig. 106. Columbus

Fig. 107. Magellan

Another man who helped to prove that the earth is round was Magellan (Fig. 107). Trace the route followed by his ships as shown by the arrows in Figures 104 and 105. One of his ships finally came again to the port from which it started.

The earth is round like a ball. On a globe the land and water can be shown. People can travel around the world.

69. The Rotation of the Earth. — Although the earth seems to us to stand still, it really is in motion. It whirls around, or *rotates*, like a baseball thrown with a spinning motion. The line around which it turns, called its *axis*, runs through the center. In a globe there is a wire in place of the axis, but the axis of the earth is like that of a baseball turning in the air. The points on the surface of the earth at the ends of the axis are called *poles*. There are two poles, the North Pole and the South Pole. Find the poles on a globe and in Figures 110 and 111. It takes twenty-four hours for the earth to make one turn on its axis.

The sun is a white-hot mass a million times as large as the earth. From the sun the earth receives its light and heat. The part of the earth turned toward the sun has light, or *day*. The part turned away from the sun has darkness, or *night*. You can see why this is by turning the globe in front of a light in a room from which the sunlight has been shut out. Only one half of the globe is lighted at a time; the other half is in darkness.

Notice on the globe the spot that represents the place where you live. Place the globe so that this spot is away from the light, and then turn the globe slowly in the direction opposite to the motion of the hands of a watch. When the light first touches the spot, it shines there just as the sun shines on your home in the morning. As you continue to turn the globe, point out the positions that represent noon, sunset, and midnight.

The earth turns around, or rotates, on its axis. This rotation fixes the position of the North and South Poles. It also causes day and night.

70. Direction on the Earth. — When persons travel toward the North Pole from any place on the earth, they are going *north*. If they travel toward the South Pole, they are going *south*. From the North Pole all places on the earth are south. From the South Pole all places are north. The shortest possible lines from one pole to the other, on the surface of the earth, are north and south lines, and are called *meridians*.

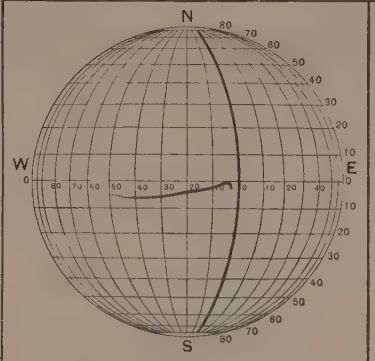

Fig. 108. Meridians and parallels; North Pole at top of the diagram

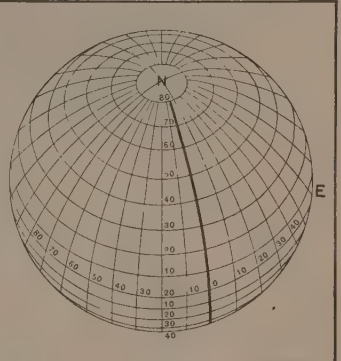

Fig. 109. Meridians and parallels; North Pole turned forward

The direction in which the earth rotates is *east*, and the opposite direction is *west*. Every east and west line crosses the meridians at right angles. The east and west line around the earth halfway between the poles is the *Equator*. Many other east and west lines may be drawn on a globe. On any east and west line all points are at the same distance from the Equator. That is, every such line is parallel to the Equator, and all east and west lines are called *parallels*. Find meridians and parallels on your globe and in Figures 108 and 109.

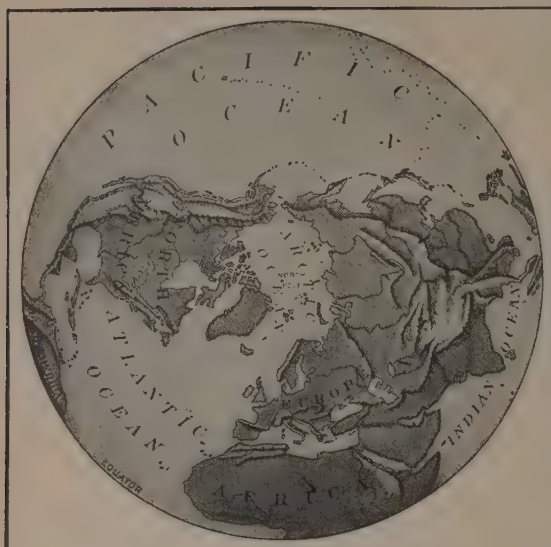

Fig. 110. Northern Hemisphere

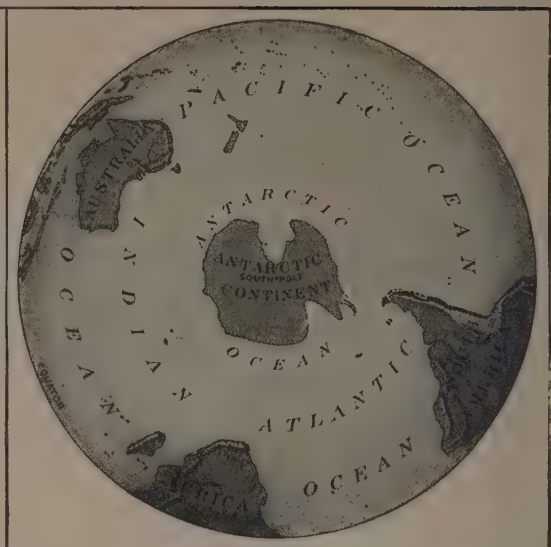

Fig. 111. Southern Hemisphere

If the earth were cut into two parts along the Equator, it would be divided into two half spheres, or *hemispheres*. One of these is called the Northern Hemisphere (Fig. 110), and the other the Southern Hemisphere (Fig. 111). The earth may be divided also by meridians into so-called Eastern and Western Hemispheres (Figs. 104, 105).

Toward the North Pole is north. Toward the South Pole is south. Meridians are lines running north and south. The direction in which the earth rotates is east. The Equator and other parallels are lines running east and west.

71. Easy Ways of Finding Direction. —On March 21 and on September 22 the sun rises in the morning almost exactly in the east. If at sunrise on those days you stretch out your arms (Fig. 112), and stand with your right hand toward the sun, your left hand will be pointing west. You will be facing toward the north, and your back will be turned toward the south.

If you watch the shadows of objects on a bright, sunny day, you will notice that they are long in the early morning and late evening, and shortest at noon. The shortest shadow of the day lies in a north and south direction. By means of this shadow a north and south line can be drawn (Fig. 113). If you stand on such a line and face toward the north, your right hand will be toward the east, your left hand toward the west, and your back toward the south.

Fig. 112. Finding directions by the rising sun

Fig. 113. Finding directions by a shadow at noon

An easy way of finding direction on a clear, starry night is to look for the North Star. Any one walking toward this star is going north. The star is near the Big Dipper (Fig. 114). See if you can find it on some clear night. After the North Star has been found, how would you locate east, south, and west?

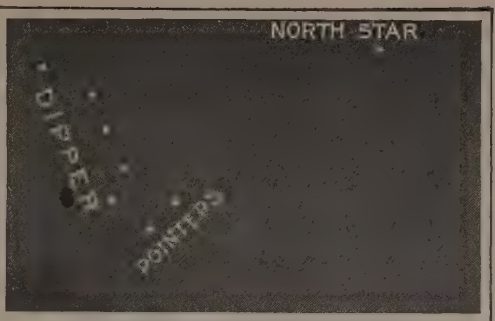

Fig. 114. How to find the North Star

A long time ago some one discovered that it is possible to find direction by using an instrument called a *compass* (Fig. 115). The important part of this instrument is a special kind of small steel bar called a magnetic needle, so hung that it can swing easily. The needle points nearly toward the north in most parts of the world, and is used by sailors in guiding their ships and by persons traveling in the woods.

Fig. 115. Compass

The four directions north, east, south, and west are the principal, or *cardinal*, points. The direction halfway between east and south is *southeast;* halfway between south and west is *southwest;* halfway between west and north is *northwest;* and halfway between north and east is *northeast.*

In what direction is your home from the school? See if you can point in all of the directions shown in Figure 115.

Direction may be found by noticing where the sun rises or sets on March 21 or September 22, by finding the direction of the shortest shadow, by locating the North Star, and by using the compass.

72. How to Locate Places on the Earth. —If you wish to direct a stranger to some place in a city or village, you will give him the names of the streets which cross each other near it. For example, you may say: "The place is near State Street and Randolph Street." It is easy to locate places that are near the crossing of streets and roads.

The meridians and parallels about which you have been studying are lines crossing at right angles, like many city streets. It is possible to show some of them on a globe and by their help to locate any place on the earth. The meridians and parallels are, of course, not actual marks on the surface of the earth, any more than are the boundary lines between many city or village lots.

It is, however, always possible to find the boundary lines by measuring, and men have also learned how to find the Equator and to tell how far any place is north or south of it. By selecting one of the meridians as a line from which to start, they can also tell how far a place is east or west of this first or *prime* meridian.

The prime meridian generally used passes through the great city of London. Find this meridian on your globe.

As parallels are circles, and meridians are half circles, we must know how to find particular points on a circle. For measurement every circle is divided into 360

equal parts, called *degrees*. In circles of different sizes, the degrees of one circle are longer or shorter than those of another, but a degree is always just $\frac{1}{360}$ of its own circle (Fig. 116). Find on a globe the parallel which has the longest degrees. As meridians are all of the same size, the degrees on the meridians are of equal length.

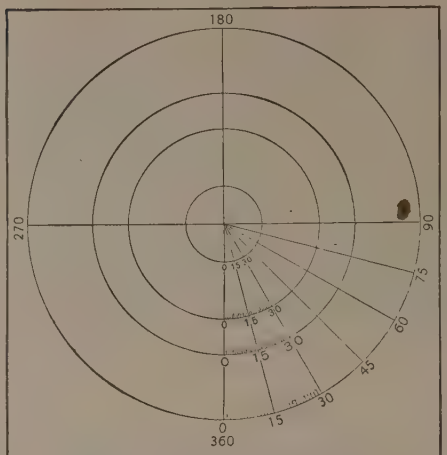

Fig. 116. Divisions of circles

Any place can be located as a certain number of degrees north or south of the Equator. This we call the *latitude* of the place. Every place is a certain number of degrees east or west of the prime meridian. This we call its *longitude*.

Places on the earth are located as a certain number of degrees (or parts of degrees) north or south of the Equator, and east or west of the prime meridian.

Review of Sections 66 to 72.—1. How much of the earth's surface can you see at a time? 2. What do we call the line where the earth and sky seem to meet?

3. Is there more land or water on the earth's surface? 4. Into how many large masses is most of the land divided?

5. What is the form of the earth? 6. What voyage did Christopher Columbus take, and what did he find? 7. What journey did the men with Magellan make?

8. What is the axis of the earth? 9. Where are the two poles? 10. How long does it take the earth to turn once on its axis? 11. When do we have day? When do we have night?

12. What direction is north? South? 13. What direction is east? West? 14. What are meridians? What are parallels? 15. What is the Equator? 16. What is the Northern Hemisphere? The Southern Hemisphere?

17. How may the direction north be found? 18. How may the other directions be found?

19. How may the earth be represented? 20. How do we locate places on the globe? 21. What is a degree?

Fig. 117. Atlantic Ocean

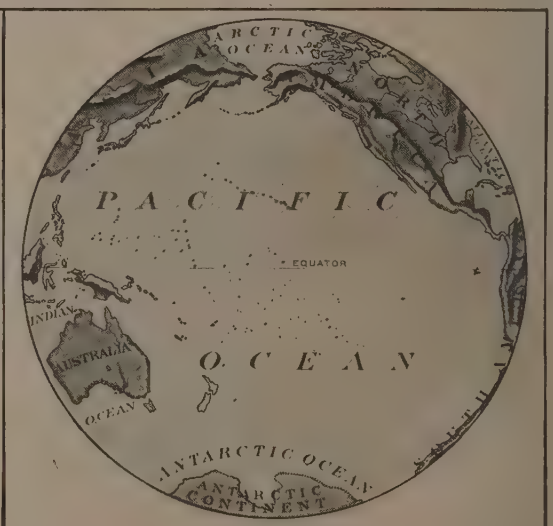

Fig. 118. Pacific Ocean

LAND AND CLIMATE

73. The Continents and Oceans.—Figure 104 shows the Western Hemisphere. In this hemisphere is the New World which Columbus discovered. The northern mass of land is the continent of *North America*, of which our own country, the *United States*, is a part. The southern land mass is the continent of *South America*. The portion of the great ocean east of America is called the *Atlantic Ocean*, and that on the west is the *Pacific Ocean* (Figs. 117 and 118).

Fig. 119. Eastern Hemisphere, showing Indian Ocean

Figure 105 shows the other half of the globe, the Eastern Hemisphere, or, as it is often called, the Old World. At the north (Fig. 119) are the two continents of *Europe* and *Asia*. Asia is the largest of all the continents. South of Europe and southwest of Asia is the continent of *Africa*. In the eastern part of the hemisphere and south of the Equator is the continent of *Australia*, the smallest of the continents. South of Asia, and between Africa and Australia, is the *Indian Ocean*.

Figure 110 shows the Northern Hemisphere. In this hemisphere is the greater part of the land surface of the earth. It contains all of North America, Europe, and Asia, and parts of South America and Africa. The ocean about the North Pole is called the *Arctic Ocean*.

The Southern Hemisphere is shown in Figure 111. It contains Australia, the larger part of South America, and a part of Africa, but most of its surface is water. Explorers have recently found that there is a large land mass, the *Antarctic Continent*, around the South Pole, but this land is covered with ice and is surrounded by the cold waters of the *Antarctic Ocean*.

Locate the seven continents and five oceans on the globe.

Of the continents Asia is the largest; Africa is next in size; then come North America, South America, the Antarctic Continent, Europe, and Australia. The ocean is really all one, but its parts have been given different names. The largest part is the Pacific Ocean; then, in order of size, come the Atlantic, the Indian, the Arctic, and the Antarctic.

74. The Distribution of Population.—The polar regions are so cold that not many people can live there. The regions near the Equator are much warmer, and people can live there without much work.

In some rainy regions near the Equator trees and other plants grow so close together that they form a dense forest, or *jungle*, in which only a few people can live. In the very dry regions called deserts, not many plants will grow, except where water can be brought in or where there are oases. Consequently the deserts are inhabited by only a few people.

Fig. 120. Winter

Fig. 121. Summer

Find the hot and the cold regions on your globe.

Between the cold polar regions and the hot equatorial regions, there are regions that are moderately warm, or that are cold in the winter (Fig. 120) and warm in the summer (Fig. 121). These are the *temperate* regions, where about three fourths of the people of the world live. In these regions most of the agriculture, lumbering, mining, fishing, and manufacturing in the world is carried on.

The temperate regions of the continent of North America are occupied by the United States, the southern part of Canada, and the northern part of Mexico. Why are we interested in this part of the world? Find these countries on the globe. Nearly all of Europe and most of Asia are included in the temperate regions. The temperate part of the Southern Hemisphere includes the southern parts of South America, Africa, and Australia.

In the polar regions it is too cold for people to live comfortably. In many parts of the equatorial regions, few people can live because of wet jungles and dry deserts. There are more people in the temperate regions of the Northern Hemisphere than in other parts of the world.

75. Why Some Regions are Hot, Some Cold, and Others Temperate.—The earth receives from the sun not only light (Sec. 69), but also heat. Notice how warm it is at different times during the day. You will find that the early morning, when it is just beginning to be light, is a cool part of the day. During the morning it grows warmer, and a little after noon it usually becomes as warm as it will be during the day. Later it grows cool again, and the night is usually the coldest part of the twenty-four hours.

It is warmest about noon because the sun is highest in the sky at that time. The sun's rays of light and heat then come from a direction most nearly overhead. A ray from directly overhead is called a *vertical* ray. Vertical rays warm the earth's surface much more than the slanting rays, such as we receive in the morning and evening.

In the parts of the world near the Equator, the sun is directly overhead, or almost directly overhead, during the middle of every day in the year. That is why the equatorial regions are hot.

The polar regions are cold because the sun's rays there are very slanting, even at noon in summer. Near the poles during

the winter there is no sunshine at all for several weeks or months, and it is then intensely cold.

In the temperate regions the sun is never directly overhead. It rises higher in the sky during the long summer days than it does during the short winter days. It is for these reasons that the temperate regions are moderately warm, or are warm in summer and cold in winter.

It is easy to remember that the sun rises to different heights in the sky in summer and in winter, and also in the equatorial, temperate, and polar regions; but it is hard to understand why the sun does this. There are two reasons: (1) Besides turning on its axis, the earth is steadily moving forward in a yearly journey around the sun. This motion is called its *revolution*. The earth revolves around the sun once in a year. (2) The earth's axis points always in the same direction — namely, toward the North Star.

In Figure 122 the earth is shown in four positions in its *orbit*, or curved path around the sun. The earth is shown large so that we can see how it is lighted at different seasons. In reality, the sun is much larger than the earth, and is so far away that the earth's orbit is many thousand times longer than is shown on the diagram.

The straight line *NS* represents the earth's axis; notice its position, always pointing in the same direction. Five other straight lines, on each of the four diagrams of the earth, represent parallels of latitude on the earth's surface, as in Figure 108. As you look at each diagram, remember that the earth is all the time turning on its axis, one rotation in twenty-four hours.

On June 21 (*A*, Fig. 122) the North Pole is turned toward the sun, and all the earth north of the *Arctic Circle* is in sunlight during the whole day of twenty-four hours, though the sun's rays are very slanting. The region south of the *Antarctic Circle* is in continuous darkness. On December 21 (*C*, Fig. 122) the North Pole is turned away from the sun; the region within the Arctic Circle is in darkness, and that within the Antarctic Circle is in light. These two regions are called the *Frigid Zones*. Frigid means *frozen*. The zone bounded by the Arctic Circle is the *North Frigid Zone*, and the one bounded by the Antarctic Circle is the *South Frigid Zone*. Find these two circles on the globe.

On June 21 the sun's vertical rays are on the *Tropic of Cancer*, north of the Equator (*A*, Fig. 122); and on December 21 they are on the *Tropic of Capricorn* (*C*, Fig. 122). On all other days of the year the vertical rays are somewhere between these two tropics, or circles.

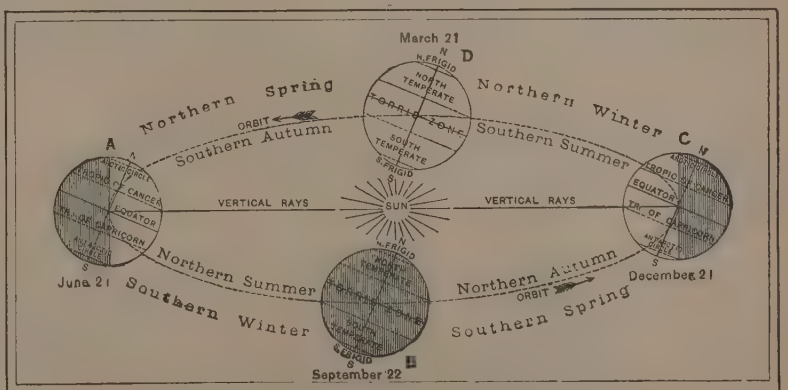

Fig. 122. Positions of the earth at different seasons

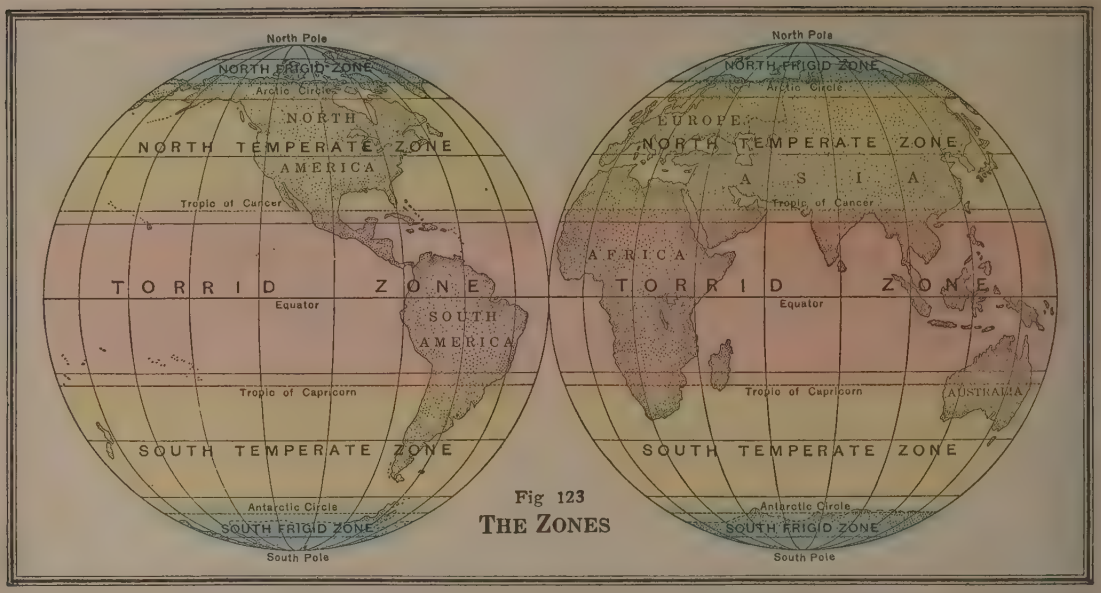

Fig 123
THE ZONES

Find the Tropic of Cancer and the Tropic of Capricorn on the globe. The region between them is the *Torrid Zone*. Torrid means *hot*.

The region between the Arctic Circle and the Tropic of Cancer is the *North Temperate Zone*. It is the zone in which we live. Between the Tropic of Capricorn and the Antarctic Circle is the *South Temperate Zone*. Temperate means *moderate;* that is, not very hot and not very cold. But in the Temperate Zones most of the land has warm summers and cold winters.

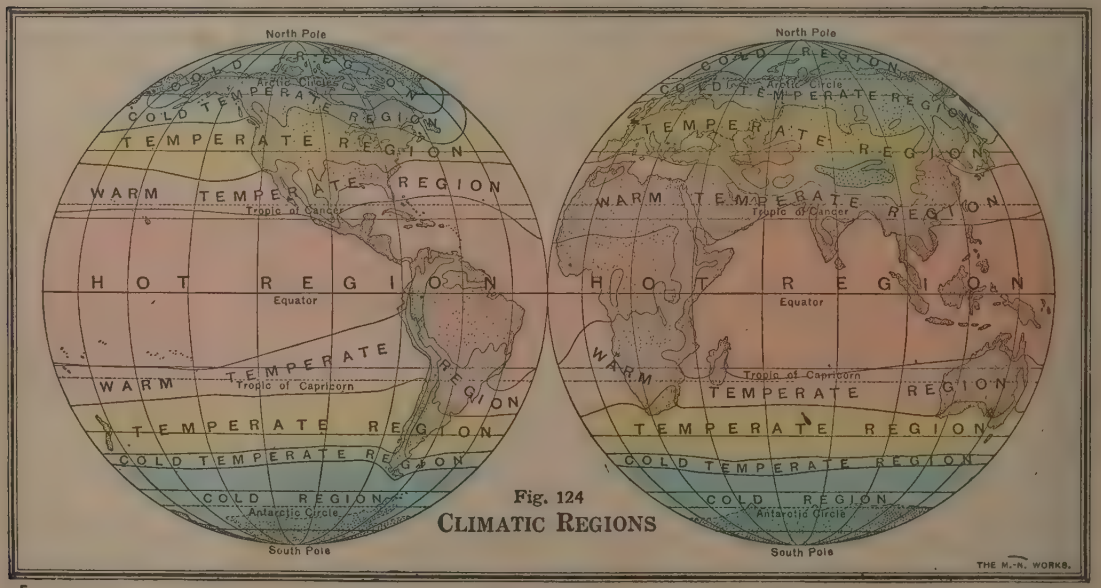

Fig. 124
CLIMATIC REGIONS

On March 21 (*D*, Fig. 122) and on September 22 (*B*, Fig. 122) the vertical rays of the sun are on the Equator, and sunlight reaches as far as both poles. All places on the earth are in daylight twelve hours and in darkness twelve hours.

From March 21 to September 22 the Northern Hemisphere has more sunlight than the Southern Hemisphere; the days there are longer than the nights, while in the Southern Hemisphere the nights are longer than the days.

From September 22 to March 21 the Southern Hemisphere has more sunlight than the Northern; the days in the Southern Hemisphere are longer than the nights, while the nights in the Northern Hemisphere are longer than the days.

The longest day of the year is on June 21 (Northern Hemisphere) or on December 21 (Southern). The lengths of day and night change slowly from day to day as the earth moves forward in its orbit.

At all places in the Torrid Zone the sun is nearly overhead at noon, and sometime during the year is directly overhead. In the Temperate Zones the sun is never directly overhead, but there is some daylight and some darkness every twenty-four hours in the year. In the Frigid Zones the sun's rays are very slanting, and there is a midsummer period of continuous daylight, and a midwinter period of continuous darkness, lasting, at different places, two or more days, or several weeks, or even several months.

76. The Climates of the Continents. — At many places in our own and other countries, the weather (Sec. 60) for each day is observed, and a record is made of the temperature and rainfall. When these weather records have been made for a long time they may be averaged to show the average weather, or *climate*. If in any region most of the days are cold and dry, then we say that the climate of that place is cold and dry. We can also study the records for each month by themselves; and we find that the climate is different in different parts of the year.

The two hemispheres in Figure 124 have been colored to show the average temperatures of different regions of the earth. The regions that are hot every month in the year are heavy red. Regions that are cold most of the time are heavy blue. The other parts of the world, marked with the lighter colors, are temperate for at least a part of the year. The light blue regions, however, are cold for more than half of the year, and the light red regions are hot for more than half of the year.

Notice how crooked the lines are that separate these different regions. Compare them with the regular lines separating the zones in Figure 123. There are two reasons why the regions in Figure 124 are of irregular shape: (1) In each continent there are mountains and high plains, where it is colder than on the lowlands (Sec. 25). (2) Land masses are heated and cooled more quickly than water masses. Therefore the lines between different climatic regions are more irregular on the continents than on the oceans.

In our own continent, we find that the northern parts are in the cold region. The temperate region extends farther north on the west side of the continent than it does on the east. The hot region includes the southern part of the continent, especially the lowlands near the coast. Compare this with the Torrid Zone (Fig. 123). Nearly all of Europe and most of Asia are in the temperate regions, while large parts of Africa, South America, and Australia are in the hot region.

The climate of a place is its average weather. Temperatures taken for a long time in different parts of the world, when averaged, show that the hot, temperate, and cold regions are not exactly the same as the zones.

77. The Influence of Climate on Products.—You have learned that the growth of plants depends on temperature, moisture, and soil (Secs. 11, 12). Both the plants and the animals of one region differ greatly from those of other regions that are much warmer or colder.

Fig. 125. Freight for foreign countries

As you study about the different countries of the world you will learn of their products. From part of the world come the fine furs from animals that live only where it is very cold. From another part of the world come fruits and spices that can grow only where it is hot. The people of some countries grow wheat for their bread. In some other countries, too warm or too wet for wheat, the people live mostly on rice.

People in all parts of the world exchange with one another the surplus products of their own countries (Fig. 125).

The products of the different countries of the world are not alike. Each country raises the plants and animals that are best suited to the climate.

Review of Sections 73 to 77.—1. Where is North America? South America? The Atlantic Ocean? The Pacific Ocean? 2. Where is Europe? Asia? The Arctic Ocean? 3. Where is Africa? Australia? The Indian Ocean?

4. Where is the Antarctic Continent? The Antarctic Ocean?

5. Why do not many people live in the polar regions? Why not in some of the regions near the Equator? 6. Where do most of the people of the world live?

7. How is the earth heated? 8. Why are the equatorial lowlands always hot? 9. Why are the polar regions cold? 10. What is meant by the earth's revolution? How long a time is required for one revolution? 11. In what part of the year is the North Pole turned toward the sun? Away from the sun? 12. In which zone do the sun's rays strike the earth squarely? 13. In which zones are the sun's rays most slanting? 14. How does the sun shine on the Temperate Zone? 15. What are the boundaries of the North Temperate Zone?

16. What is weather? Climate? 17. Why are some places colder or warmer than other places in the same latitude?

18. Why are not the same kinds of plants and animals raised in all parts of the world? 19. If one country raises more wheat than it needs, what is done with the surplus?

MAPS

78. Representing Large Things by Small Drawings.—Our earth is a sphere, and is best represented by a globe. Large globes are difficult to handle, yet even the largest ones are much too small to show well all the features of the earth's surface.

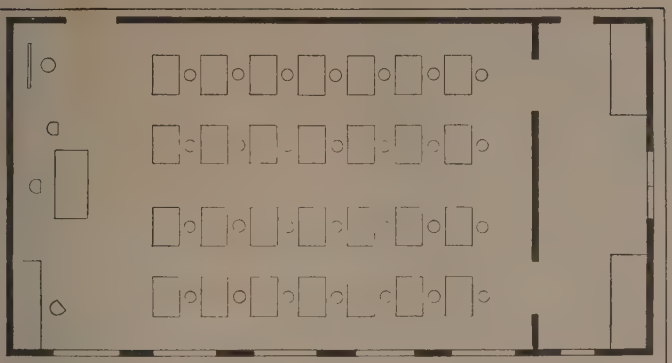

Fig. 126. Plan of a schoolroom; scale, 9 feet to 1 inch

Drawings such as Figures 59 to 65 are used to show parts of the earth.

Some drawings of objects are made full size; that is, as large as the objects themselves. Usually, however, a drawing is much smaller. A certain measure on the drawing stands for a much larger one on the object. One inch in the drawing may stand for a foot, a yard, a mile, or any other chosen length. When such a unit of length is used for all parts of a drawing, we say that the drawing is made to scale.

Drawings made to scale are used to represent parts of the earth's surface.

79. Making a Plan of a Schoolroom.—The drawings on this page (Figs. 126–128) are all of the same schoolroom, but are made on different scales. They show the outlines of the room, desks, and platform, and are called plans. The scale used is given below each plan. Measure the drawings and see if you can tell how long and how wide the room is.

Make a plan of your own schoolroom. To do so it will be necessary to measure its length and width, and find the position and size of each of the doors and windows and of the desks. Everything must be drawn to the same scale. Make your first plan on the scale of two feet to an inch; that is, let one inch represent two feet. Make another plan on the scale of four feet to one inch.

Choose another scale and make a plan of your school building, school yard, and the near-by streets.

The same object may be drawn to different scales. The size and detail of the drawing depend on the scale chosen.

80. Choosing a Map Scale.—Drawings of the earth's surface are called *maps*, and are made on many different scales. The

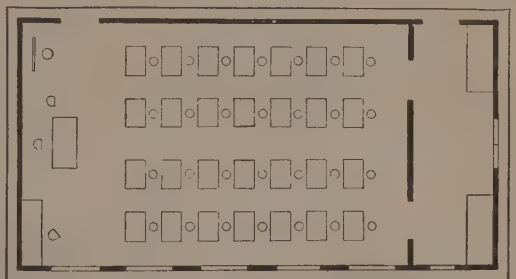

Fig. 127. Same schoolroom; scale, 12 feet to 1 inch

scale chosen is small for some maps because they are to be printed on the pages of a certain book. For other maps the scale may be larger, to show more details than could be shown on a small map.

The scale used in the construction of a map is usually shown somewhere on the map. Find it in Figure 135, and Figure 147. This scale may be shown by a line marked off in lengths representing 10 miles, 100 miles, or the like (Fig. 147); or it may be

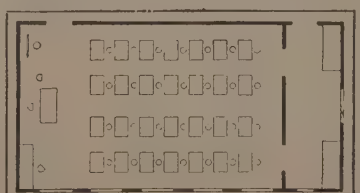

Fig. 128. Scale, 18 feet to 1 inch

given as *so many miles to one inch* (Fig. 135). Figures 145, 147, 144, 150, show maps of the same region on different scales.

The scale used in maps depends upon the size of the paper on which the map is to be printed, and upon the number of facts to be shown.

81. Map Symbols.—In drawing the plan (or map) of a schoolroom or other small area, it is usually enough to draw the outlines of the objects represented (see Fig. 126). Sometimes, however, it is necessary to show which of the buildings are churches or schools, which streets have railways, and other facts. For this purpose special marks or symbols are used. Churches may be shown by a cross (✠), and railways by a line (————) or by a line with short crossing marks (┼┼┼┼┼┼┼┼┼┼┼┼┼┼┼┼).

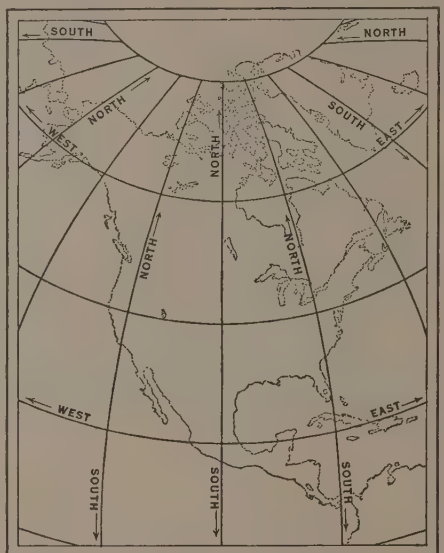

Fig. 129. Directions on a map

To be able to tell just what maps show, it is necessary to know the meanings of the symbols. Turn to Figure 134. Here color is used to show height. Note the colors used for different heights, and tell the heights of the land at different points as shown by the colors.

Objects are sometimes shown by their outlines, but on maps many facts may be shown by special marks or symbols.

82. Direction on Maps.—How do you find direction on the earth (Sec. 71)? When a map is printed in a book or hung on the wall, it is usually so placed that the part of the map showing the north is toward the top. On maps showing a very small part of the earth, north is usually toward the top, east toward the right, south toward the bottom, and west toward the left of the map. But this is not true of all maps.

The best way to find directions on maps is by noticing the meridians and parallels (Sec. 70), if they are shown. You remember that meridians are north and south lines drawn on the globe from pole to pole, and that the parallels are east and west lines crossing the meridians at right angles. Nearly all maps of large areas show parts of the meridians and parallels, usually as curved lines. On such maps north and south will be along the meridians, and east and west along the parallels (Fig. 129). Find these four directions on different parts of a large map of Asia.

Most maps show only a part of the earth's surface, but all parts of the surface are curved like a piece of orange peel or a part of a rubber ball. If we try to press the piece of orange peel out flat, it will tear along the edge (Fig. 130). Even the piece of rubber ball must stretch along its outer edge when it is flattened.

As maps are printed on flat pieces of paper, map makers have learned how to draw the parallels and meridians so that the continents and countries will look very much as they do on the globe. But this means that they are either stretched

on the edges or pressed together near the center.

Direction is best shown on maps by the use of meridians and parallels.

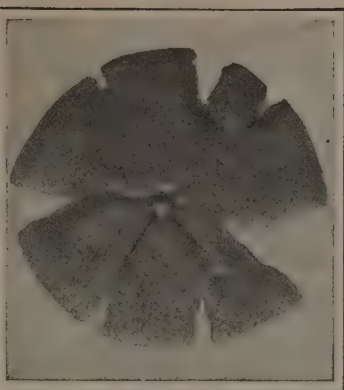

Fig. 130. Orange peel pressed flat

83. Different Kinds of Maps.—The two kinds of maps most used are the *physical map* and the *political map*. Figure 134 is a physical map of North America, and Figure 135 is a political map of the same continent.

Physical maps show what we call the *physical features* of a country. These include the coast lines, lakes, and rivers, the lowlands, and the highlands. From such a map one can usually tell at once whether the country shown is a plain or a mountain region. If the country is mountainous, the map shows which parts are higher and which lower; so that, from a large-scale physical map, one could find the passes through which roads and railroads might most easily be built across the mountains. Make a list of all the physical features that you can find on Figure 134, and describe the symbols by which they are shown.

Political maps also show certain physical features, such as coast lines, lakes, and rivers. They are used especially, however, to show (1) the different countries and states into which the continents are divided, with the boundary lines that separate them; and (2) the cities, roads, railroads, canals, lighthouses, and other things that people have built.

Most of these things are shown by symbols. The symbol for a boundary, showing where the land belonging to one country or state stops and that belonging to another begins, is usually a broken line (– – – –

Fig. 132

Relief Map

NORTH AMERICA

Scale of Statute Miles

0 100 200 300 400 500 600 700 800 900 1000

700 MILES TO ONE INCH

Location of land below sea level is shown by arrows
Lowlands are shown in green
Higher lands are shown in yellow or buff
Great elevations are shown in purple
Snow-covered peaks and slopes are uncolored
Other mountain slopes are shaded
Water is shown in blue
Arctic ice-fields are shown in light blue

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NORTH AMERICA

THE CONTINENT

84. Position.—We speak of the continent of North America as our continent because it is the one on which we live. For this reason it is the most interesting to us and is the first of the great continents of the world that we shall study.

Look at North America on your school globe. Figure 133 is a photograph of a globe taken to show this continent and the oceans and lands that are near it. Study also Figures 104, 110, 132, 134, and 135. You will notice that all of North America is north of the Equator, but even its most northern island does not reach to the North Pole. What ocean is west of North America? What ocean is east of it? What ocean is north of it?

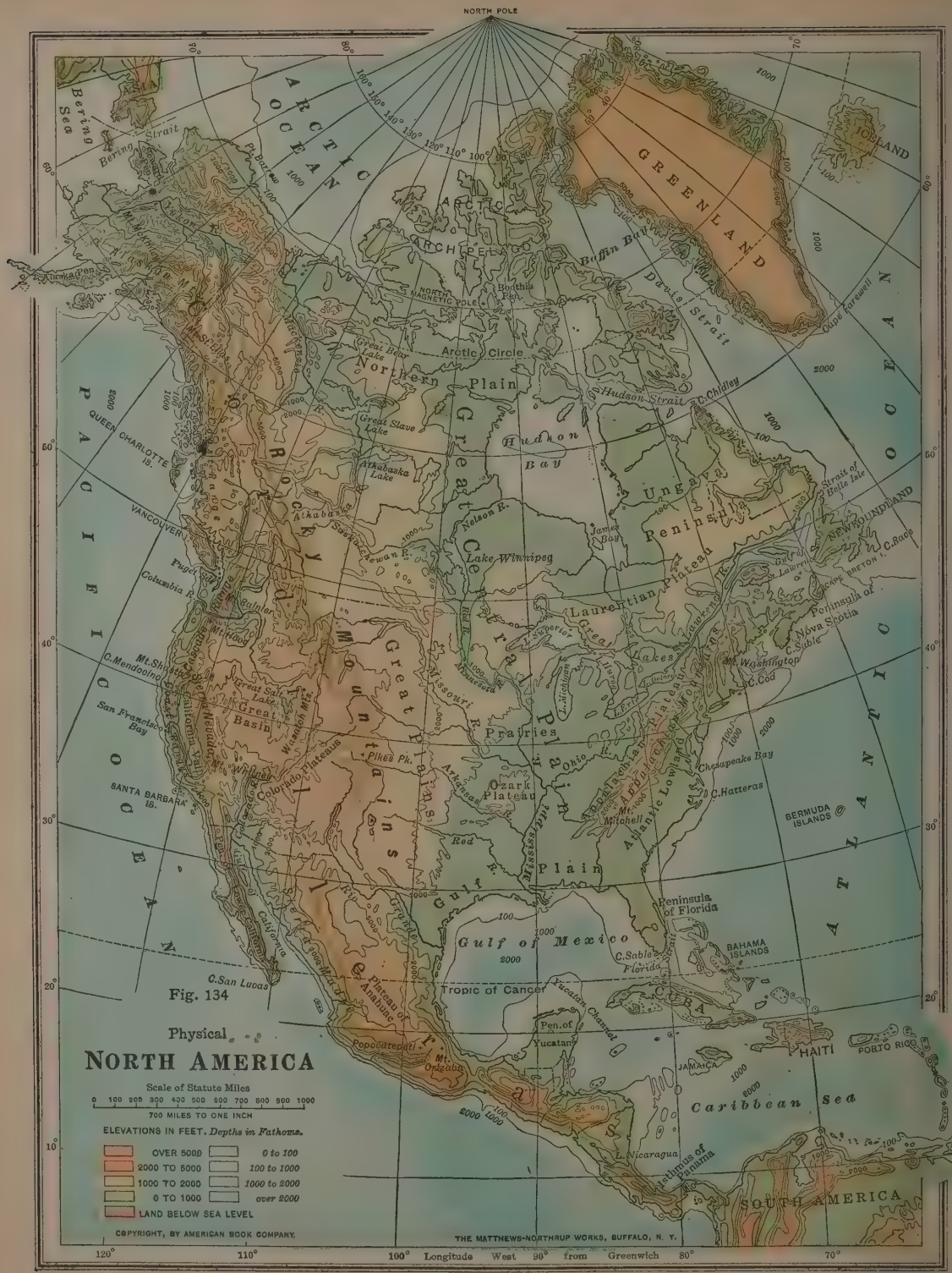
Fig. 133. North America and the bordering waters

85. Size.—North America, as we have learned, is larger than any other continent except Asia and Africa. It is so wide that fast trains traveling day and night take four days in going from the city of New York on the Atlantic Ocean to San Francisco on the Pacific Ocean. A very fast walker once walked across the United States from the Pacific to the Atlantic in 91 days. This included, of course, the time spent in eating and sleeping.

86. Political Divisions.—The continent is divided into different countries as shown in Figure 135. Most of the northern part is included in the *Dominion of Canada* and belongs to Great Britain, one of the countries of Europe. The island of *Newfoundland*, off the eastern coast, also belongs to Great Britain, while the large island of *Greenland* belongs to Denmark, another of the countries of Europe. West of Canada is *Alaska*, which belongs to the United States.

The United States, our own country, occupies the central part of the continent. South of it is *Mexico*, a country one fourth as large as ours, and *Central America*, a group of small countries occupying the most southern part of the continent. One of these countries, named *Panama*, occupies the isthmus that connects North America with South America. The United States now controls a strip of land, ten miles in width, across the isthmus. A great canal, through which the largest ships can pass from ocean to ocean, has been constructed through this strip by our government. Find it on the map.

Southeast of the United States, and east of Mexico and Central America, is a group of islands known as the *West Indies*.


NORTH POLE
ARCTIC OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
GREENLAND
ICELAND
Bering Sea
Bering Strait
ASIA
ALASKA
Mt. McKinley
ARCHIPELAGO
NORTH MAGNETIC POLE
Boothia Pen.
Baffin Bay
Davis Strait
Cape Farewell
Arctic Circle
Northern Great Plain
Great Bear Lake
Great Slave Lake
Hudson Strait
C. Chidley
Hudson Bay
Ungava Peninsula
Strait of Belle Isle
NEWFOUNDLAND
C. Race
Peninsula of Nova Scotia
C. Sable
Mt. Washington
C. Cod
Laurentian Plateau
Lake Winnipeg
Nelson R.
James Bay
Rocky Mountains
Great Central Plain
Great Lakes
Prairies
Great Basin
Great Salt Lake
Wasatch Mts.
Colorado Plateaus
Pikes Pk.
Ozark Plateau
Appalachian Mountains
Mt. Mitchell
Atlantic Lowland
Chesapeake Bay
C. Hatteras
BERMUDA ISLANDS
Gulf Plain
Gulf of Mexico
Peninsula of Florida
BAHAMA ISLANDS
C. Sable Florida
Tropic of Cancer
CUBA
Pen. of Yucatan
Yucatan Channel
HAITI
PORTO RICO
JAMAICA
Caribbean Sea
Plateau of Anahuac
Popocatepetl
Mt. Orizaba
L. Nicaragua
Isthmus of Panama
SOUTH AMERICA
QUEEN CHARLOTTE IS.
VANCOUVER
Fuca Str.
Columbia R.
Rainier
Mt. Hood
Mt. Shasta
C. Mendocino
San Francisco Bay
SANTA BARBARA IS.
C. San Lucas
California
Gulf of California
Colorado R.
Rio Grande
Missouri R.
Mississippi R.
Ohio R.
Red R.
Arkansas R.
Saskatchewan R.
Athabasca R.
Athabasca Lake
Great Bear Lake
Great Slave Lake
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
St. Lawrence R.
Gulf of St. Lawrence
Cape Breton I.
Peninsula of Nova Scotia
Fig. 134
Physical
NORTH AMERICA
Scale of Statute Miles
0 100 200 300 400 500 600 700 800 900 1000
700 MILES TO ONE INCH
ELEVATIONS IN FEET. Depths in Fathoms.
OVER 5000
2000 TO 5000
1000 TO 2000
0 TO 1000
LAND BELOW SEA LEVEL
0 to 100
100 to 1000
1000 to 2000
over 2000
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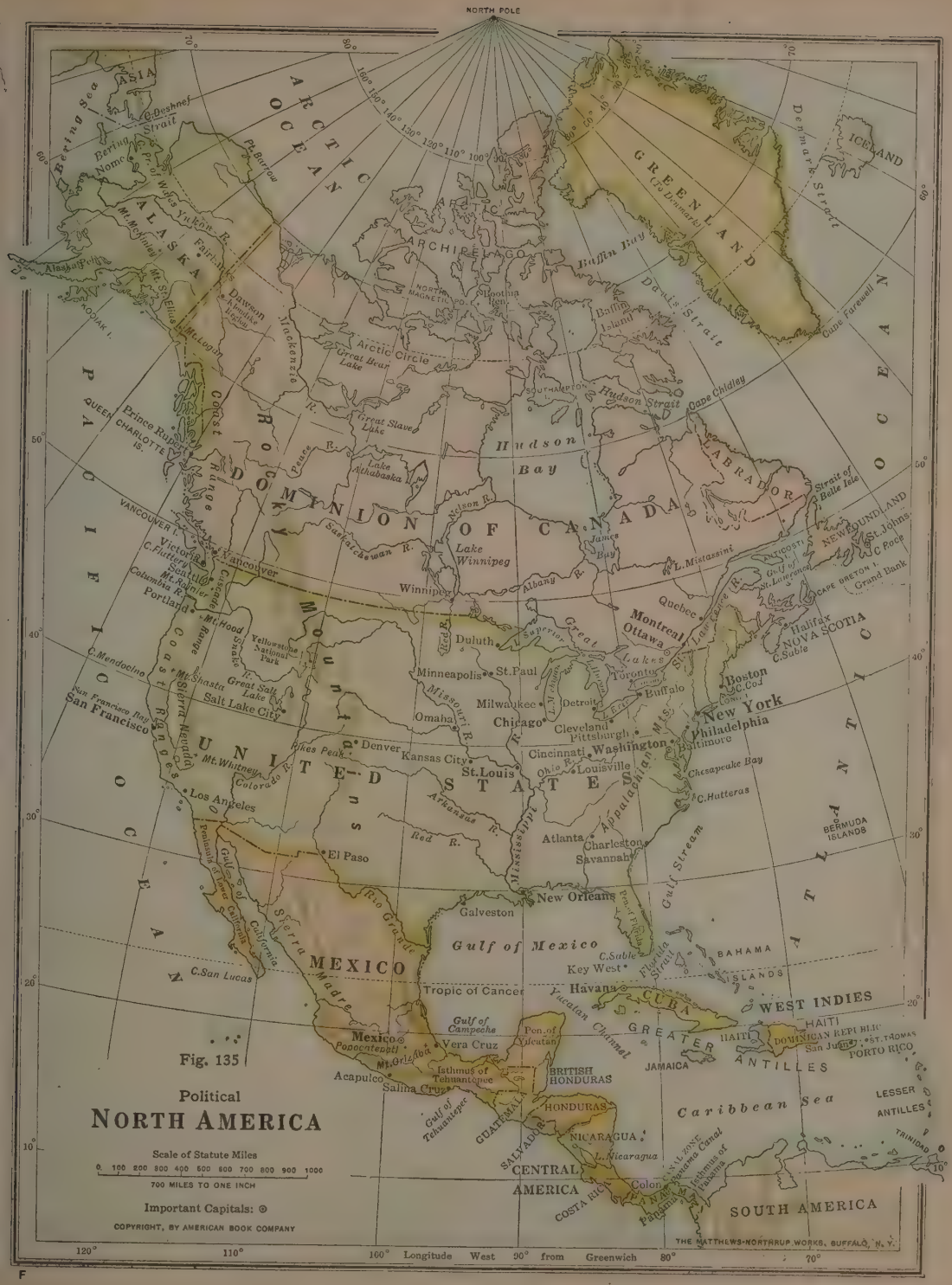
THE MATTHEWS-NORTHRUP WORKS, BUFFALO, N. Y.
120° 110° 100° Longitude West 90° from Greenwich 80° 70°


NORTH POLE
ARCTIC OCEAN
ASIA
Bering Sea
Bering Strait
C. Deshnef
Nome
Pt. Barrow
ALASKA
Yukon R.
Fairbanks
Mt. McKinley
Mt. St. Elias
Alaska Pen.
KODIAK I.
Dawson
Mackenzie R.
Great Bear Lake
Arctic Circle
Great Slave Lake
Peace R.
Lake Athabaska
ARCHIPELAGO
NORTH MAGNETIC POLE
Boothia Pen.
Baffin Bay
Davis Strait
GREENLAND
Cape Farewell
Denmark Strait
ICELAND
Baffin Island
Cape Chidley
Hudson Strait
Hudson Bay
LABRADOR
Strait of Belle Isle
NEWFOUNDLAND
St. Johns
C. Race
Grand Bank
Cape Breton I.
Gulf of St. Lawrence
Anticosti I.
Montreal
Ottawa
Quebec
Halifax
NOVA SCOTIA
C. Sable
Boston
C. Cod
New York
Philadelphia
Baltimore
Washington
Chesapeake Bay
C. Hatteras
BERMUDA ISLANDS
Gulf Stream
ATLANTIC OCEAN
PACIFIC OCEAN
QUEEN CHARLOTTE IS.
Prince Rupert
Coast Range
DOMINION OF CANADA
Saskatchewan R.
Lake Winnipeg
Nelson R.
James Bay
L. Mistassini
Albany R.
Winnipeg
Vancouver I.
Victoria
Vancouver
Seattle
Mt. Rainier
Columbia R.
Portland
Mt. Hood
Cascade Range
Yellowstone National Park
Duluth
Superior
Great Lakes
St. Lawrence R.
Toronto
Buffalo
C. Mendocino
Mt. Shasta
Great Salt Lake
Salt Lake City
San Francisco Bay
San Francisco
Sierra Nevada
Minneapolis
St. Paul
Milwaukee
Detroit
Chicago
Cleveland
Pittsburgh
Omaha
Missouri R.
Mississippi R.
Ohio R.
Cincinnati
Louisville
Denver
Pikes Peak
Kansas City
St. Louis
Mt. Whitney
Colorado R.
Los Angeles
UNITED STATES
Arkansas R.
Red R.
Appalachian Mts.
Atlanta
Charleston
Savannah
El Paso
Peninsula of Lower California
Gulf of California
Rio Grande
Sierra Madre
MEXICO
New Orleans
Galveston
Gulf of Mexico
Florida Pen.
Florida Strait
C. Sable
Key West
BAHAMA ISLANDS
C. San Lucas
Tropic of Cancer
Havana
CUBA
WEST INDIES
Gulf of Campeche
Pen. of Yucatan
Yucatan Channel
GREATER ANTILLES
HAITI
DOMINICAN REPUBLIC
San Juan
ST. THOMAS
PORTO RICO
Mexico
Popocatepetl
Mt. Orizaba
Vera Cruz
Isthmus of Tehuantepec
Acapulco
Salina Cruz
BRITISH HONDURAS
JAMAICA
LESSER ANTILLES
TRINIDAD
Caribbean Sea
Gulf of Tehuantepec
GUATEMALA
HONDURAS
SALVADOR
NICARAGUA
L. Nicaragua
CENTRAL AMERICA
COSTA RICA
Panama Canal
Isthmus of Panama
Colon
SOUTH AMERICA
Political
NORTH AMERICA
Scale of Statute Miles
0 100 200 300 400 500 600 700 800 900 1000
700 MILES TO ONE INCH
Important Capitals: ⊙
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120° 110° 100° Longitude West 90° from Greenwich 80° 70°
F

Fig. 135

Fig. 136. In the cold northern part of the continent

Review of Sections 84 to 86.—1. Why is North America called our continent? 2. What large bodies of water wash its shores? 3. To what other continent is it joined? By what?

4. What continents are larger than North America? What continents are smaller? 5. How long does it take a fast train to cross from New York to San Francisco?

6. Name the large countries into which the continent is divided. 7. In which country do we live? 8. Where are the small countries of the continent? 9. To what country does Canada belong? Alaska? Newfoundland? Greenland? 10. Where are the West Indies?

87. The Cold and the Warm Regions.—From the position of North America we should expect the northern part of the continent to be cold, the central part warmer, and the southern part hot. And so they are.

In the cold regions of the north (Fig. 136) there is little agriculture. A few Indians and Eskimos live there by hunting and fishing, and since the discovery of gold in Alaska and northwestern Canada, many miners have gone into those regions.

In southern Canada and northern United States the summers are warm and comfortable, and the winters cold. Crops grow during the summer, and cattle graze freely over the great pastures, or ranges. This is the time when most of the outdoor work is done. During the winter the ground is covered with snow for many days or for many weeks (Sec. 9). This part of the continent belongs to the temperate region, and has more people than any other part (Fig. 138).

In the most southern parts of the United States and of Mexico, and in the countries lying still farther south, the weather is hot most or all of the time (Fig. 124). During several hours of the hot summer days the people can do but little work. Where there is enough moisture, plants grow very freely (Fig. 137), and it is not always easy to clear the fields. Even after the fields have been cleared of wild growth, it is often difficult to keep them clear, so that the plants that are needed can be cultivated.

Fig. 137. In the warm southern part of the continent

The central part of Mexico is a highland, or *plateau*, that is much cooler than the rest of the country, and is the only part that is thickly

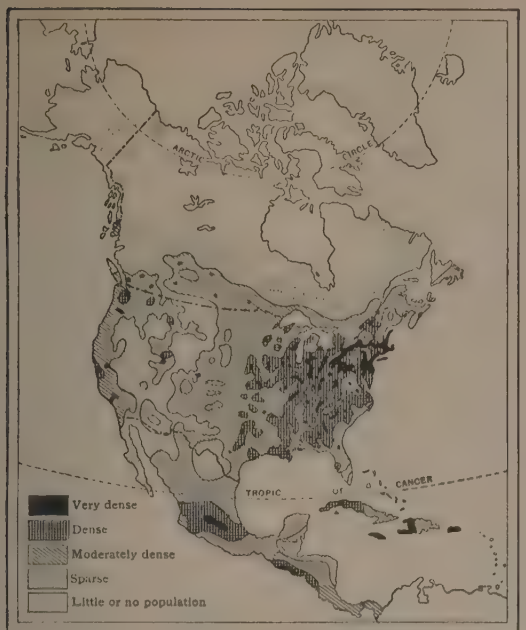

Fig. 138. Density of population, North America

populated (Fig. 138). Farther north, in the cooler parts of the United States and Canada, there are fewer people in the highlands than in the lowlands.

88. **Surface.**—Turn to the physical map of North America (Fig. 134). Notice carefully the colors of the map and the meanings of these colors, as shown in the lower left-hand corner. There are two great highland areas. The higher and longer highland is known as the *Cordilleras*. It is on the western side of the continent and runs northwest and southeast for nearly its entire length. Its western edge is close to the Pacific Ocean, especially at the north. It is broadest in the United States, where it is about one third the width of the continent.

The other highland area, called the *Appalachian Mountains*, is in the eastern part of the continent. It is not so long or so broad or so high as the western highland. It runs northeast and southwest. For much of its length it is separated from the ocean by a broad, gently sloping plain. Both the Cordilleras and the Appalachian Mountains are made up of many different ranges, each of which has its own name.

Between the highlands is a *great central plain*, which extends from the Arctic Ocean to the Gulf of Mexico. Find it on the map. Find also the Great Lakes, near the middle of the plain. North and west of the Great Lakes is a slight elevation that divides the great central plain into two parts. The rivers of the northern part flow into the Arctic Ocean and Hudson Bay. The southern part is drained southward into the Gulf of Mexico and eastward through the Great Lakes and the St. Lawrence River into the Atlantic Ocean.

Review of Sections 87 and 88.—1. What parts of North America are cold? 2. What parts are hot? 3. Where are the temperate regions? 4. Where do most of the people live?

5. Name the two great highland regions of the continent. 6. Which of them is the larger? 7. Where is the smaller? 8. Where is the great central plain? 9. How is it divided into northern and southern parts?

89. **Rainfall.**—All the moisture that falls to the earth is called *rainfall*, no matter whether it falls as rain or as snow. You have already learned that most of the moisture in the air comes from the ocean (Sec. 58). The rainfall of every continent depends on the winds that blow over it from the ocean. The rain or snow may fall on the sides of mountains against which the winds blow, because the mountains force the winds to higher levels (Sec. 59). It may fall also on other parts of the land, especially where the winds move northward toward the colder regions.

Fig. 139. Prevailing winds of North America

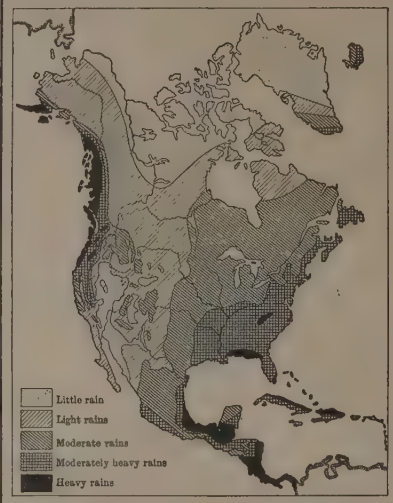

Fig. 140. Rainfall of North America

Figure 139 shows the direction of the prevailing winds during the summer and during the winter; and Figure 140 shows the different parts of the continent that have heavy rainfall and light rainfall.

As winds blow from the Pacific Ocean across the Cordilleras, much rain falls on the western side of the mountains. Moisture from the Gulf of Mexico and the Atlantic Ocean falls in the eastern part of the United States, with the heaviest rains in the south.

In the northern part of the continent, and on the high mountains, a part of the moisture falls as snow. During the warm months of the year, most of this snow melts and flows away in streams.

In the extreme north and in the highest mountains there is snow on the ground all the year (Fig. 14). In such regions the snow is gradually packed and frozen into ice. Large masses of such ice, called *glaciers* (Fig. 142) move very, very slowly down the slopes of the land.

In the far north, especially in Alaska and Greenland, some glaciers reach the ocean. Immense pieces called *icebergs* (Fig. 141) break off and float away. The largest icebergs may drift a long distance before they are entirely melted. They are greatly dreaded by sailors, for ships sometimes run into them in the fog or darkness. The glaciers on mountains far from the ocean move slowly down the mountain valleys until the ice is melted by the warmth of the lower levels. Where such a glacier melts it forms the source of a mountain stream.

Fig. 141. An iceberg in the northern ocean

90. Rivers and Lakes. — The Mississippi River flows from north to south through the southern part of the great central plain. Read again Section 37, where the Mississippi river system is described.

The largest of the western tributaries is the Missouri. If we take the Missouri River as the upper part of the main stream, in place of the upper Mississippi, the Missouri-Mississippi is the longest river in the world. The most important eastern

tributary of the Mississippi is the Ohio. Find these rivers on your map. The Ohio River, and the Mississippi for most of its course, are deep enough for the use of steamboats (Sec. 51).

In the northern part of the great central plain there are several large rivers. For the most part they follow the general slope of the land, and flow from the warmer southern to the colder northern regions. During the winter they are usually frozen their entire length. When spring comes, they thaw out first at the south. As the water is not able to escape through the ice-choked channels to the north, it spreads out over the land in great floods.

Fig. 142. A glacier in Alaska

Most of the rivers in the eastern part of North America are short, because the mountains are so near the ocean. A few of them, such as the Hudson and the Susquehanna, have cut deep valleys through the mountains. Many of the rivers have waterfalls and rapids which furnish power for mills and factories. On some of the rivers, boats carry freight and passengers, and railroads have been built through many of the valleys.

The largest and longest of the eastern water routes extends through the St. Lawrence River and the Great Lakes. Ship canals (Sec. 51) have been dug around the rapids of the St. Lawrence, from Lake Ontario to Lake Erie past Niagara Falls, through the shallow waters connecting Lake Erie and Lake Huron, and around the rapids connecting Lake Huron and Lake Superior. Many ships can now pass from the Atlantic Ocean to distant points on Lake Superior and Lake Michigan.

Two of the western rivers, the Colorado and the Columbia, rise in the higher eastern parts of the Cordilleras. For much of the distance to the Pacific Ocean they flow through the deep canyons which they have cut. Many shorter streams flow down the western slopes of the mountains into the Pacific Ocean. On a few of the western rivers, boats carry freight and passengers, and through some of the valleys railroads have been built across the western highlands.

Review of Sections 89 and 90.—1. Where is the rainfall heavy in North America? 2. Where is it light? 3. How are glaciers formed? 4. Where are they found? 5. What are icebergs? 6. Why are they dangerous to ships?

7. What river system drains the eastern Cordilleras, the western Appalachians, and the southern part of the great central plain? 8. On what river nearest your home do boats carry passengers and freight? 9. Why are there springtime floods in the far north? 10. What use is sometimes made of rapids and falls in streams?

11. Why do railroads often follow river valleys (Sec. 49)? 12. For what reasons do people dig canals (Sec. 51)? 13. How has a safe route for ships been made through the Great Lakes and the St. Lawrence River?

14. Where do the Colorado and Columbia rivers rise? 15. What kind of valleys do they have?

F

Fig. 143

Relief Map

UNITED STATES

Scale of Statute Miles

0 50 100 200 300 400

252 MILES TO ONE INCH

Location of land below sea level is shown by arrows
Lowlands are shown in green
Higher lands are shown in yellow or buff
Great elevations are shown in purple
Snow-covered peaks and slopes are uncolored
Other mountain slopes are shaded
Water is shown in blue

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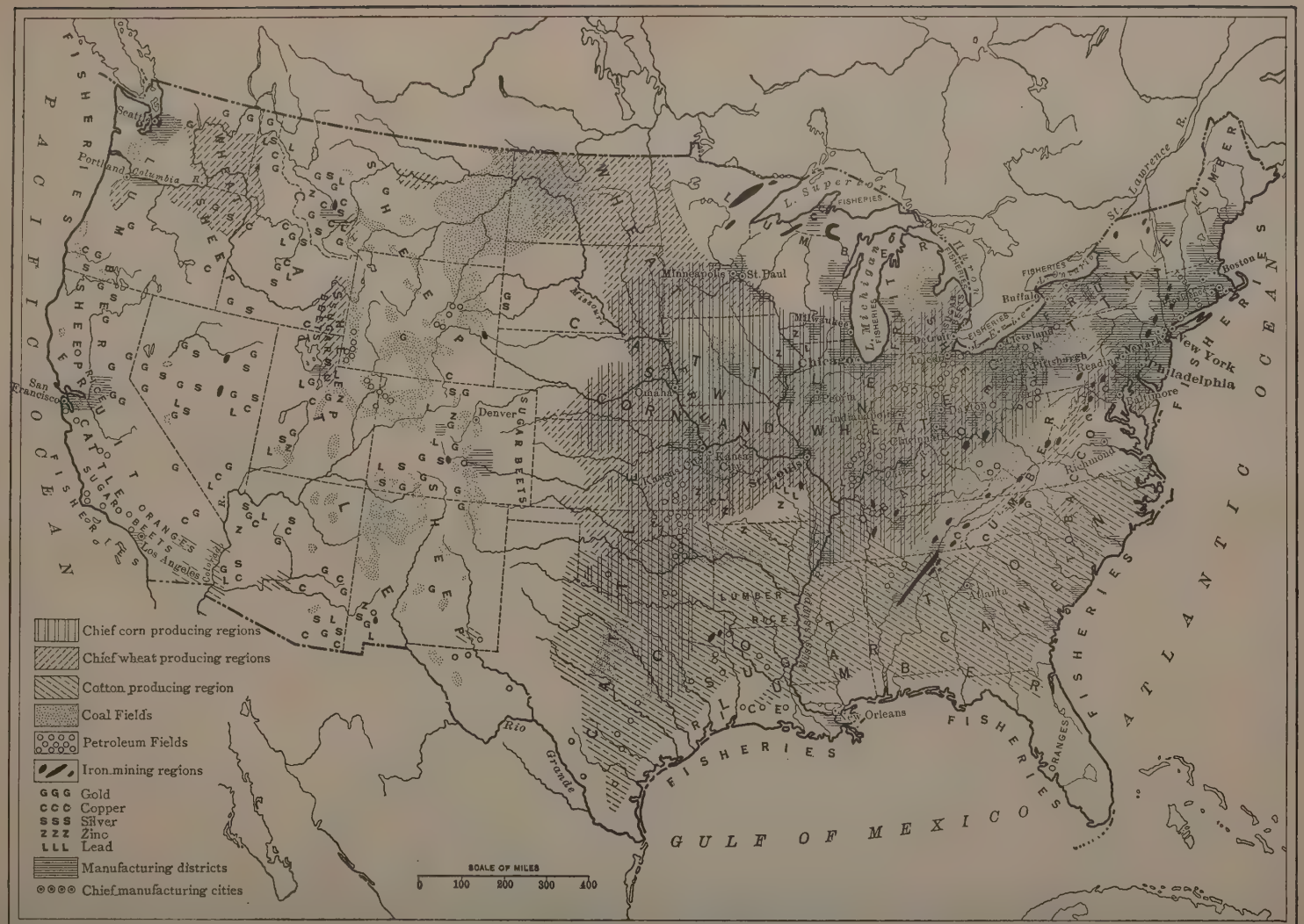


Fig. 144. Industrial map of the United States

L.L. POATES CO., N.Y.

THE UNITED STATES

OUR COUNTRY

91. The Boundaries of the United States.—The United States occupies the central part of North America. It is bordered on the east by the Atlantic Ocean and on the west by the Pacific Ocean. North of the United States is Canada, and south of it is Mexico. On Figures 135 and 150 trace the boundaries of the United States.

Important land boundaries are carefully located and marked by monuments of stone or metal set up at short distances along the line (Fig. 131). Some boundary lines are long and straight, or nearly straight, like the one between Canada and northwestern United States, and like many of those between different states (Fig. 150). Such lines cross mountains, valleys, plains, and rivers. Other boundary lines may follow the crest of a mountain range, or the divide between rivers which flow in opposite directions. Find such boundary lines in Figure 150.

What water boundaries separate the United States from Canada? From Mexico? Where two countries or states are separated by a river the boundary may follow one bank of the stream; but it is usually located in midstream. If there are many islands, as in the St. Lawrence River, the boundary winds in and out so that some of them belong to one country and some to the other.

Where large lakes lie between two countries, as between the United States and Canada, the line is generally drawn so as to divide each lake equally between the two countries.

Boundary markers are seldom set up in lakes and rivers. Such boundaries are marked only on maps (Fig. 150), but it is always possible to find the boundary line by measuring from the shore.

92. Industrial Regions.—Read again, in Sections 87, 88, and 89, about the highlands and lowlands, and about the temperature, winds, and rainfall of the United States.

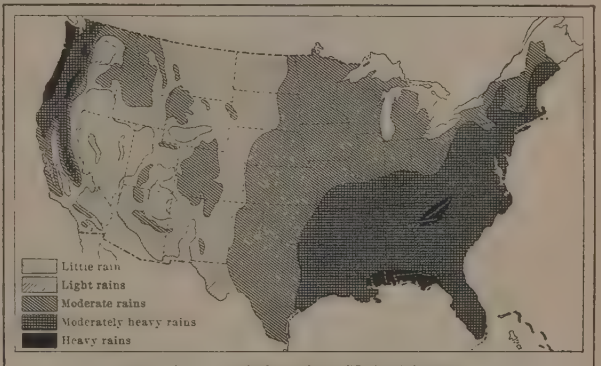
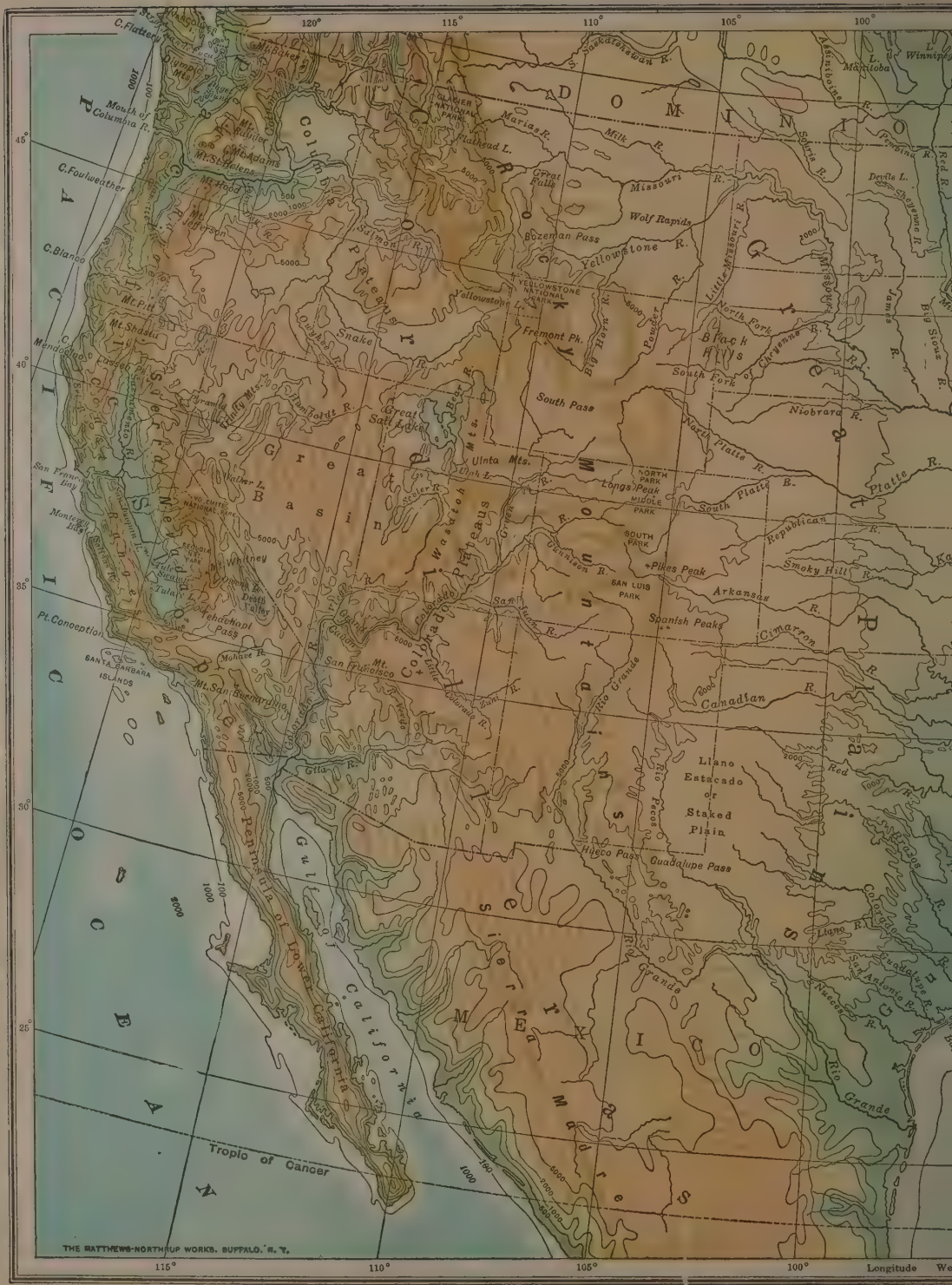


Fig. 145. Rainfall of the United States

The crop that will grow best in any place will depend chiefly upon the temperature, the rainfall, and the soil of that place. As our country is very large, and as some parts are much higher than others, the different sections have very different temperatures. Figure 145 shows how much the rainfall varies. As a result of these differences of temperature and rainfall, many different crops are raised in the United States. Our country produces each year more food than our own people need. The surplus is sold in other countries.

Figure 144 shows the chief industrial regions of the United States. The names of important crops raised in the different parts of the country are printed on the map. What are some of these?


C. Flattery
Mt. Baker
Mt. Rainier
Mt. Adams
Mt. St. Helens
Mt. Hood
Mt. Jefferson
Mt. Pit
Mt. Shasta
Mt. Whitney
Death Valley
Tehachapi Pass
Mohave R.
Mt. San Bernardino
Pt. Conception
SANTA BARBARA ISLANDS
Gila R.
Peninsula of Lower California
Gulf of California
Tropic of Cancer
Columbia R.
Mouth of Columbia R.
C. Foulweather
C. Blanco
C. Mendocino
Cascade Mts.
Sierra Nevada Mts.
Coast Ranges
Great Basin
Colorado Plateaus
Wasatch Mts.
Uinta Mts.
Great Salt Lake
Utah L.
Sevier L.
Sevier R.
Humboldt R.
Carson R.
Truckee R.
Owyhee R.
Snake R.
Salmon R.
Flathead L.
Clark's Fork
Missoula R.
Bitter Root Mts.
Glacier National Park
Marias R.
Milk R.
Great Falls
Missouri R.
Wolf Rapids
Bozeman Pass
Yellowstone R.
Yellowstone National Park
Yellowstone L.
Fremont Pk.
Big Horn R.
Powder R.
Little Missouri R.
Black Hills
North Fork
South Fork of Cheyenne R.
Big Sioux R.
Niobrara R.
South Pass
North Platte R.
Platte R.
Longs Peak
North Park
Middle Park
South Park
South Platte R.
Republican R.
Smoky Hill R.
Pikes Peak
San Luis Park
Arkansas R.
Spanish Peaks
Cimarron R.
Canadian R.
Red R.
Llano Estacado or Staked Plain
Pecos R.
Rio Grande
Colorado R.
Gila R.
Sierra Madre
Mexico
Hueco Pass
Guadalupe Pass
Llano R.
Brazos R.
Colorado R.
Guadalupe R.
San Antonio R.
Nueces R.
Rio Grande
Dominion
Saskatchewan R.
Assiniboine R.
L. Manitoba
L. Winnipeg
Red R.
Devils L.
Sheyenne R.
James R.
Missouri R.
Big Sioux R.
Pacific Ocean
120°
115°
110°
105°
100°
45°
40°
35°
30°
25°
Longitude We
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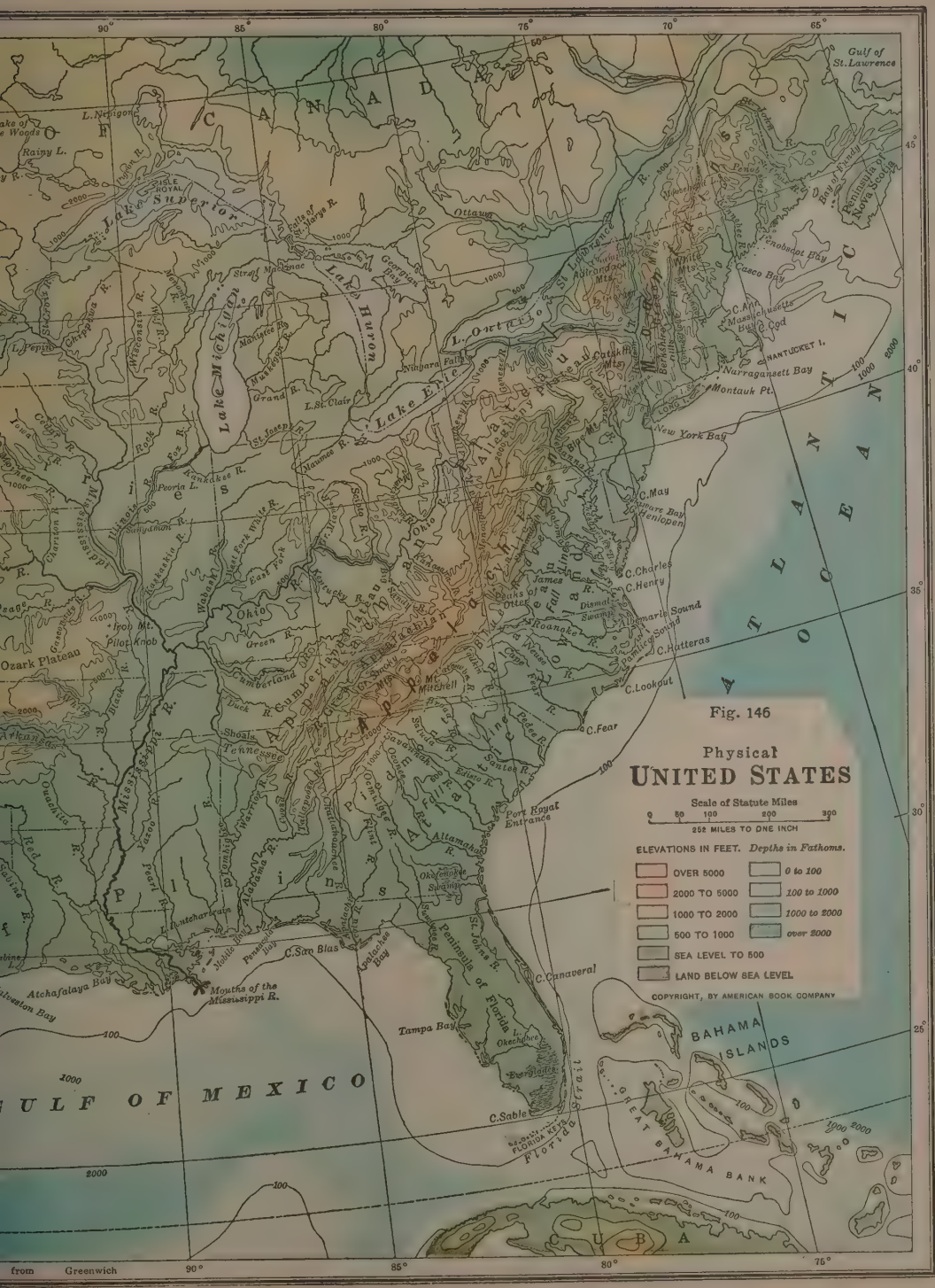


Fig. 146
Physical
UNITED STATES
Scale of Statute Miles
0 50 100 200 300
252 MILES TO ONE INCH
ELEVATIONS IN FEET.
OVER 5000
2000 TO 5000
1000 TO 2000
500 TO 1000
SEA LEVEL TO 500
LAND BELOW SEA LEVEL
Depths in Fathoms.
0 to 100
100 to 1000
1000 to 2000
over 2000
COPYRIGHT, BY AMERICAN BOOK COMPANY
CANADA
ATLANTIC OCEAN
GULF OF MEXICO
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
L. Ontario
Mississippi R.
Ohio R.
Missouri R.
Appalachian Mts.
Cumberland Plateau
Alleghany Mts.
Blue Ridge
Piedmont Plateau
Coastal Plain
Ozark Plateau
Florida
BAHAMA ISLANDS
GREAT BAHAMA BANK
CUBA
Gulf of St. Lawrence
Bay of Fundy
Penobscot Bay
Casco Bay
C. Ann
Massachusetts Bay
C. Cod
NANTUCKET I.
Narragansett Bay
Montauk Pt.
New York Bay
C. May
Delaware Bay
Chesapeake Bay
C. Charles
C. Henry
Albemarle Sound
Pamlico Sound
C. Hatteras
C. Lookout
C. Fear
Port Royal Entrance
C. Canaveral
Tampa Bay
C. Sable
Florida Keys
Florida Strait
Atchafalaya Bay
Mouths of the Mississippi R.
C. San Blas
Apalachee Bay
Pensacola Bay
Galveston Bay
Rainy L.
L. Nipigon
Eagle Royal
Sault Ste. Marie R.
Straits of Mackinac
Green Bay
Milwaukee
Chicago
Grand R.
L. St. Clair
Niagara Falls
Ottawa
St. Lawrence R.
Adirondack Mts.
White Mts.
Green Mts.
Berkshire Hills
Long I.
Connecticut R.
Hudson R.
Delaware R.
Susquehanna R.
Potomac R.
James R.
Roanoke R.
Cape Fear R.
Pee Dee R.
Santee R.
Edisto R.
Savannah R.
Altamaha R.
St. Johns R.
Okefenokee Swamp
Everglades
Okeechobee L.
Suwannee R.
Apalachicola R.
Chattahoochee R.
Alabama R.
Tombigbee R.
Tennessee R.
Cumberland R.
Kentucky R.
Wabash R.
Illinois R.
Missouri R.
Arkansas R.
Red R.
Rio Grande
Pecos R.
Colorado R.
Gila R.
Platte R.
Yellowstone R.
Saskatchewan R.
Assiniboine R.
Red R.
Winnipeg L.
Lake of the Woods
Rainy L.
L. Superior
L. Michigan
L. Huron
L. Erie
L. Ontario
Mississippi R.
Ohio R.
Missouri R.
Appalachian Mts.
Cumberland Plateau
Alleghany Mts.
Blue Ridge
Piedmont Plateau
Coastal Plain
Ozark Plateau
Florida
BAHAMA ISLANDS
GREAT BAHAMA BANK
CUBA
Gulf of St. Lawrence
Bay of Fundy
Penobscot Bay
Casco Bay
C. Ann
Massachusetts Bay
C. Cod
NANTUCKET I.
Narragansett Bay
Montauk Pt.
New York Bay
C. May
Delaware Bay
Chesapeake Bay
C. Charles
C. Henry
Albemarle Sound
Pamlico Sound
C. Hatteras
C. Lookout
C. Fear
Port Royal Entrance
C. Canaveral
Tampa Bay
C. Sable
Florida Keys
Florida Strait
Atchafalaya Bay
Mouths of the Mississippi R.
C. San Blas
Apalachee Bay
Pensacola Bay
Galveston Bay
Rainy L.
L. Nipigon
Eagle Royal
Sault Ste. Marie R.
Straits of Mackinac
Green Bay
Milwaukee
Chicago
Grand R.
L. St. Clair
Niagara Falls
Ottawa
St. Lawrence R.
Adirondack Mts.
White Mts.
Green Mts.
Berkshire Hills
Long I.
Connecticut R.
Hudson R.
Delaware R.
Susquehanna R.
Potomac R.
James R.
Roanoke R.
Cape Fear R.
Pee Dee R.
Santee R.
Edisto R.
Savannah R.
Altamaha R.
St. Johns R.
Okefenokee Swamp
Everglades
Okeechobee L.
Suwannee R.
Apalachicola R.
Chattahoochee R.
Alabama R.
Tombigbee R.
Tennessee R.
Cumberland R.
Kentucky R.
Wabash R.
Illinois R.
Missouri R.
Arkansas R.
Red R.
Rio Grande
Pecos R.
Colorado R.
Gila R.
Platte R.
Yellowstone R.
Saskatchewan R.
Assiniboine R.
Red R.
Winnipeg L.
Lake of the Woods

Grass will grow in many places where there is not enough rainfall for agriculture, and also where the soil is thin or difficult to cultivate. Such regions are used for grazing. The chief grazing regions of the United States are in the western half of the country.

Scattered through the mountains and in parts of the great plains are mines of coal, iron, gold, copper, silver, zinc, lead, and other minerals. These mining regions are shown on the map by shaded spots, or by the letters G, C, S, Z, L. The coal and iron mines are the most important. The coal is used to heat houses and factories, to supply power for turning the machinery of mills, and for running railroad trains. The iron is used to make all kinds of iron and steel articles, from a needle to a plow or a steamship.

Along the shores of both the Atlantic and the Pacific oceans, along part of the Gulf coast, and in the waters of the Great Lakes, there are important fisheries. There are salmon fisheries in the streams of the Pacific coast, and sponge fisheries in the Gulf of Mexico and the near-by waters. Large numbers of oysters, clams, and lobsters also are taken from the ocean waters.

One of the most important industries in which the people of our country are engaged is manufacturing. This industry can be carried on only where there are raw materials to manufacture, or where they can be easily obtained. The factories are generally located near waterfalls, coal fields, or natural gas wells that supply the power to drive the machinery. Most of them are in cities (Sec. 45).

As much raw material is brought to factories from a distance, and as manufactured goods are sent to distant markets, some means for carrying these things must be provided. The great manufacturing districts have many railroads to connect the cities with the seaports and with the other parts of the country (Fig. 147).

Figure 144 shows that the chief manufacturing district of the United States is in the northeastern part. Here are made cotton and woolen goods, boots and shoes, and many articles of wood, and of iron, steel, and other metals. Many great manufacturing cities, however, are in the South and in the West. Some of these also are shown on the map.

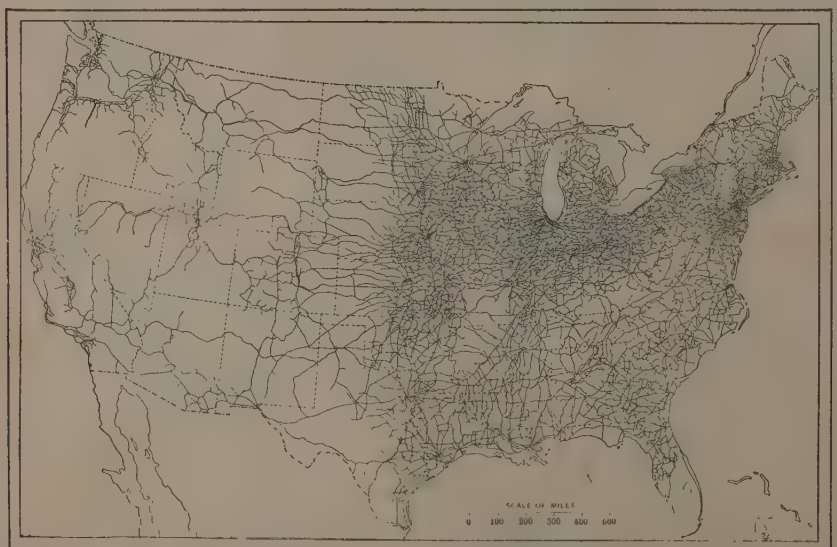


Fig. 147. Railroads of the United States

Fig. 148. A standard four-track railroad

Some raw materials, such as wool, rubber, and hides, come from distant parts of the world to the seaports of the North Atlantic. From the same ports the manufactured goods are sent out to the people of other parts of the world. This trade with other countries has helped to make the northeastern part of our country a great manufacturing region.

Review of Sections 91 and 92.—1. What ocean borders the United States on the east? On the west? 2. What rivers and lakes form part of the northern boundary of our country? 3. What river and gulf form a part of the southern boundary? 4. How are boundary lines marked? 5. Why are different crops raised in different parts of the country? 6. Name some of the important crops and tell where they are raised.

7. Where are the chief grazing districts? 8. Why are such regions not used for agriculture?

9. Where are some of the important coal and iron mines in our country?

10. Where are the chief fishing grounds?

11. Where is the chief manufacturing section of our country? 12. Why is it located where it is? 13. Of what use are the seaports?

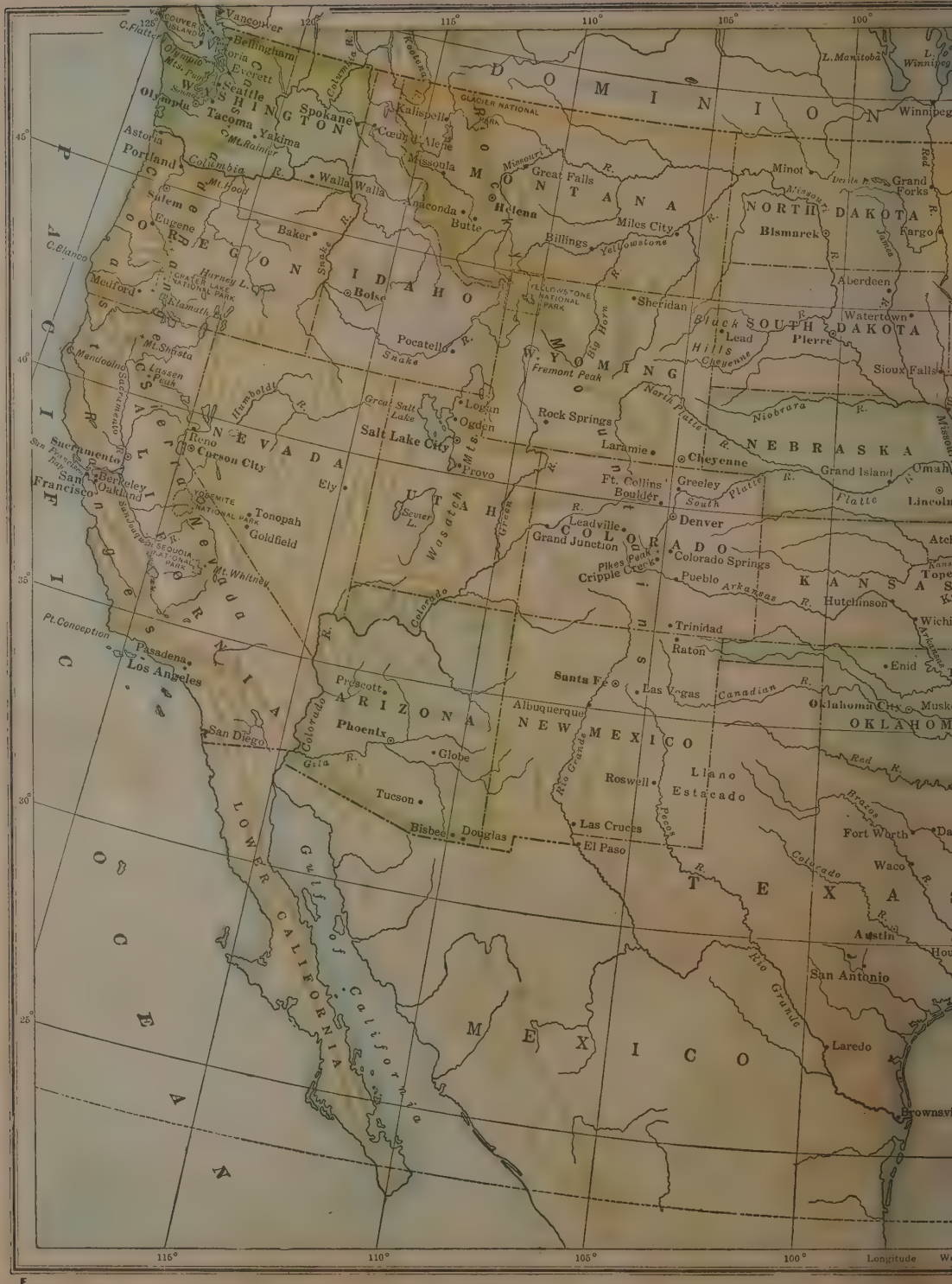
93. Our Early History.—The early white settlers of both North and South America found the country inhabited by people who were very different from those living in Europe. As these natives were first seen by Columbus when he thought he was near India, he called them *Indians*. They have been known by this name ever since.

Usually a number of families lived together as a *tribe*. In the hot countries the Indians used little clothing, but in the cold regions they wore clothing made from the skins of animals. For food they raised small crops of corn, beans, and squashes; they gathered wild berries, nuts, and roots; and they hunted and fished.

Bureau of American Ethnology

Fig. 149. Indian tepee

Some of the Indians lived mainly by hunting and fishing, and they often wandered from one hunting ground to another. They made fishhooks out of bones; and they hunted with bows and arrows. They lived in tents, called tepees or wigwams, made of skins placed over poles (Fig. 149). Such homes were easy to move.


Vancouver
Victoria
Bellingham
Everett
Seattle
Olympia
Tacoma
Spokane
Yakima
Mt. Rainier
Astoria
Portland
Columbia R.
Mt. Hood
Walla Walla
Salem
Eugene
Baker
Snake R.
Kalispell
Coeur d'Alene
Missoula
Great Falls
Helena
Anaconda
Butte
Billings
Yellowstone R.
Miles City
Minot
Bismarck
Grand Forks
Fargo
Aberdeen
Watertown
Pierre
Lead
Black Hills
Sioux Falls
Sheridan
Big Horn
Fremont Peak
Pocatello
Boise
Medford
Crater Lake National Park
Klamath R.
Mt. Shasta
Lassen Peak
Mendocino
Humboldt R.
Great Salt Lake
Logan
Ogden
Salt Lake City
Provo
Rock Springs
Laramie
Cheyenne
North Platte R.
Niobrara R.
Grand Island
Omaha
Lincoln
Reno
Carson City
Sacramento
San Francisco
Berkeley
Oakland
Ely
Yosemite National Park
Tonopah
Goldfield
Mt. Whitney
Sequoia National Park
Great Basin
Utah
Wasatch Mts.
Sevier L.
Green R.
Colorado R.
Ft. Collins
Boulder
Greeley
Denver
Leadville
Grand Junction
Colorado Springs
Pikes Peak
Cripple Creek
Pueblo
Arkansas R.
Hutchinson
Trinidad
Raton
Enid
Oklahoma City
Pt. Conception
Pasadena
Los Angeles
San Diego
Prescott
Phoenix
Globe
Santa Fe
Las Vegas
Albuquerque
Canadian R.
Gila R.
Tucson
Roswell
Llano Estacado
Rio Grande
Pecos R.
Las Cruces
El Paso
Bisbee
Douglas
Fort Worth
Waco
Brazos R.
Austin
San Antonio
Rio Grande
Laredo
Brownsville
Gulf of California
Lower California
Mexico
Pacific Ocean
Dominion
L. Manitoba
L. Winnipeg
Winnipeg
Red R.
Missouri R.
Yellowstone National Park
Glacier National Park
Columbia R.
Snake R.
Colorado R.
Platte R.
Arkansas R.
Red R.
Brazos R.
Rio Grande
Pecos R.
Canadian R.
Gila R.
Green R.
Sevier L.
Great Salt Lake
Mt. Shasta
Mt. Hood
Mt. Rainier
Mt. Whitney
Fremont Peak
Pikes Peak
Lassen Peak
Mendocino
Humboldt R.
Pt. Conception
C. Flattery
C. Blanco
Vancouver Island
Puget Sound
San Francisco Bay
Salton Sea
Sierra Nevada
Cascade Range
Rocky Mts.
Wasatch Mts.
Big Horn
Black Hills
Cheyenne
Wichita
Topeka
Kansas
Missouri
Iowa
Nebraska
Oklahoma
Texas
Arizona
New Mexico
Utah
Nevada
Colorado
Montana
Idaho
Oregon
Washington
California
Kansas
Dakota
125°
120°
115°
110°
105°
100°
45°
40°
35°
30°
25°
20°
Longitude

Political
UNITED STATES
Capitals of Countries thus: ◎
Capitals of States thus: ⊙
Scale of Statute Miles
0 50 100 200 300
882 MILES TO ONE INCH
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THE MATTHEWS-NORTHRUP WORKS, BUFFALO, N. Y.
from Greenwich
90° 85° 80° 75°
CANADA
MAINE
VERMONT
NEW YORK
PENNSYLVANIA
OHIO
INDIANA
ILLINOIS
MICHIGAN
WISCONSIN
MINNESOTA
IOWA
MISSOURI
KENTUCKY
TENNESSEE
WEST VIRGINIA
VIRGINIA
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
ALABAMA
MISSISSIPPI
LOUISIANA
ARKANSAS
FLORIDA
GULF OF MEXICO
ATLANTIC OCEAN
BAHAMA ISLANDS
CUBA
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
Mississippi R.
Ohio R.
Missouri R.
Tennessee R.
Hudson R.
St. Lawrence R.
Gulf Stream
Tropic of Cancer
Florida Strait
Delaware Bay
Chesapeake Bay
Tampa Bay
Lake Okeechobee
Everglades
Delta of the Mississippi R.
Quebec
Montreal
Ottawa
Toronto
Hamilton
Buffalo
Rochester
Albany
Boston
Portland
Bangor
Augusta
Concord
Manchester
Providence
Hartford
New Haven
Worcester
Lowell
Troy
Utica
Syracuse
Binghamton
Scranton
Wilkes-Barre
Jersey City
Newark
Trenton
Philadelphia
Harrisburg
Reading
Pittsburgh
Erie
Cleveland
Youngstown
Akron
Toledo
Detroit
Lansing
Saginaw
Bay City
Flint
Grand Rapids
Milwaukee
Racine
Madison
Chicago
Rockford
South Bend
Fort Wayne
Dayton
Columbus
Cincinnati
Wheeling
Baltimore
Washington
Annapolis
Dover
Richmond
Norfolk
Roanoke
Winston-Salem
Raleigh
Charlotte
Asheville
Knoxville
Nashville
Chattanooga
Memphis
Louisville
Lexington
Frankfort
Covington
Evansville
Indianapolis
Terre Haute
Springfield
St. Louis
East St. Louis
Peoria
Davenport
Dubuque
Winona
St. Paul
Duluth
Superior
Sault Ste. Marie
St. Marys River and Canal
Oshkosh
Milwaukee
Cape Hatteras
Cape Fear
Wilmington
Charleston
Columbia
Augusta
Atlanta
Macon
Savannah
Jacksonville
St. Augustine
Tallahassee
Pensacola
Mobile
Montgomery
Birmingham
Meridian
Jackson
Vicksburg
Natchez
Shreveport
New Orleans
Baton Rouge
Galveston
Cape San Blas
Tampa
Key West
Havana
Nassau
Cape Sable
Mt. Katahdin
Mt. Washington
White Mts.
Adirondack Mts.
Green Mts.
Berkshire Hills
Cape Cod
Nantucket
Martha's Vineyard
Block Island
Long Island
Lake of the Woods
Rainy L.
L. Nipigon
Grand R.
Saginaw Bay
Georgian Bay
Lake of the Woods
Ozark Plateau
Cumberland Plateau
Blue Ridge
Alleghany Mts.
Appalachian Mts.
Mississippi R.
Ohio R.
Missouri R.
Tennessee R.
Hudson R.
St. Lawrence R.
Gulf Stream
Tropic of Cancer
Florida Strait
Delaware Bay
Chesapeake Bay
Tampa Bay
Lake Okeechobee
Everglades
Delta of the Mississippi R.

Fig. 150

Fig. 151. Pueblo

Bureau of American Ethnology

Fig. 152. Indian, or red man

Other tribes of Indians had learned to depend more on farming than on hunting. They built much better homes than the wigwams of the wandering tribes. Some made their houses of logs or bark, with roofs of brush, grass, or sods. Some, in the dry southwestern part of our country, lived in pueblos, or village houses, built of bricks dried in the sun (Fig. 151). In these dry regions the Indians had even dug ditches to use in watering their crops.

The Indians were tall and erect, with straight black hair and skin of reddish brown. On account of the color of their skin they were called *red men*. As the people of the world are divided into large groups, or *races*, and the races are named by the color of the skin, the Indians are called the *red race*. Most of the people of Europe and of North America, as well as many people in other parts of the world, belong to the *white race*.

During the settlement of our country there were frequent wars between the white settlers and the Indians, and many cruel deeds were done on both sides. The white settlers soon outnumbered the Indians and drove them farther and farther west. In later years, our government set aside lands, or *reservations*, on which some of their descendants are now living. The Indians of to-day have learned the ways of white people, and most of them live by farming or by raising cattle, sheep, and horses.

The early white settlers in our country came from several different nations in Europe. Most of them, however, came from England; and after several wars the English conquered the settlements of other nations in the eastern part of North America. Each group of settlements with a government of its own was called a *colony*. All the colonies between the Gulf of Mexico and Hudson Bay were for a time under the control of Great Britain, the kingdom of which England is a part.

In 1776 thirteen of the British colonies combined and decided that they would no longer be British colonies. They wished to rule themselves and be independent. There was a long war, and when it was ended the colonies were independent. Each colony was formed into a *state*, and these states were united under one general government, which was called the United States.

Fig. 153. White man

Fig. 154. Black man

Fig. 155. Yellow man

But not all the people of our country are descended from these first early settlers. Many Europeans have come here since that time, and others are still coming. Early in our history, also, negroes, or people of the *black* race, were brought here from Africa as laborers. There are now many negroes in different parts of the country, especially in the South. People from China and Japan, in Asia, who belong to the *yellow* race, also came to our country. They are not now allowed to come so freely as they once were.

94. How Our Country has Grown.—Much territory has been added, from time to time, to the land included in the thirteen original states. These additions have made our country one of the largest in the world. There are now forty-eight states in the Union. In addition to these, our country includes Alaska, and controls the Canal Zone, in the continent of North America. Many islands also belong to the United States, including Porto Rico, the Hawaiian Islands, the Philippines, and others.

95. Groups of States.—We will now turn our attention to the different parts of our country. For this study we will divide the United States and its possessions into eight groups, as follows: 1. The New England States. 2. The Middle Atlantic States. 3. The South Atlantic States. 4. The South Central States. 5. The North Central States. 6. The Plateau States. 7. The Pacific States. 8. The Outlying Possessions of the United States.

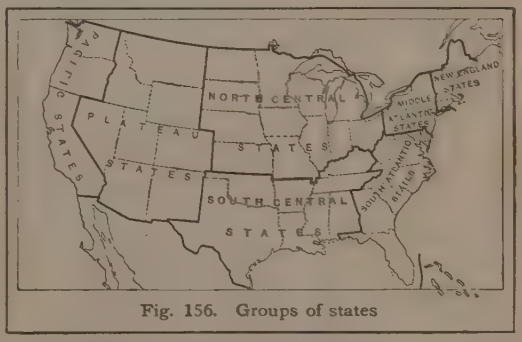

Fig. 156. Groups of states

Review of Sections 93 to 95.—1. Who were the first inhabitants of North America? 2. Why were they called Indians? 3. What food did they have? What kind of clothes? What kinds of houses? 4. Name the four races of men.

5. Where did the white settlers of our country come from? 6. What nation got possession of the eastern part of North America? 7. When the United States became independent, how many states were there? 8. How many are there now? 9. Into what groups are they divided?

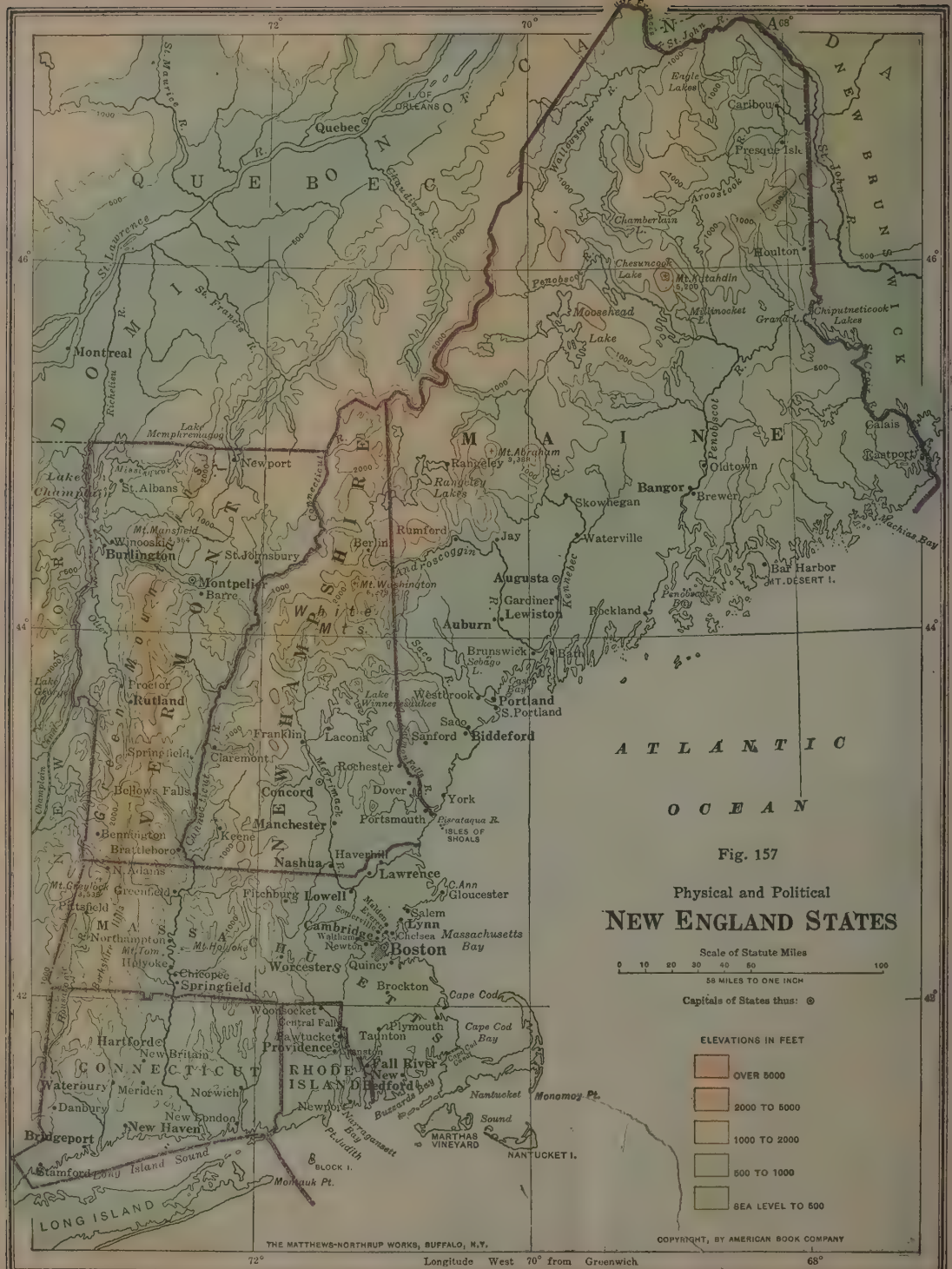
Fig. 157
Physical and Political
NEW ENGLAND STATES
Scale of Statute Miles
0 10 20 30 40 50 100
58 MILES TO ONE INCH
Capitals of States thus: ⊙
ELEVATIONS IN FEET
OVER 5000
2000 TO 5000
1000 TO 2000
500 TO 1000
SEA LEVEL TO 500
ATLANTIC OCEAN
Longitude West 70° from Greenwich
72°
68°
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Fig. 158. Mount Greylock, in the Berkshire Hills, the highest mountain in Massachusetts

THE NEW ENGLAND STATES

96. Map Study.—If you will turn to the political map of the United States (Fig. 150), you will find in the northeastern part a group of six states. The group is called New England, after England in Europe. The states are *Maine*, *New Hampshire*, *Vermont*, *Massachusetts*, *Rhode Island*, and *Connecticut*. The map facing this page represents the same group of states, drawn on a larger scale. What is the scale used in this map?

Using the scale of miles for Figure 157, find the distance in miles between Boston in Massachusetts and Augusta in Maine. Turn again to Figure 150. Using the scale for that map, find the distance between the same two cities. How do the two measurements compare? The distance between any two places should measure the same number of miles on all maps.

In studying a map you should always be careful to notice the scale of miles before deciding that a region is large or small, or that a distance is long or short.

What other state not in New England is about the same size as Maine (Fig. 150)? Rhode Island? Massachusetts? The area of Maine is half that of the New England group. Compare Maine in size with the smallest state west of the Mississippi River; with the largest.

97. Surface, Drainage, and Soil.—Along the coast and in the valleys of the larger rivers, there are some small plains. Most of New England is hilly, however, and some parts are mountainous. The greatest mountains of New England are the White Mountains of New Hampshire and the Green Mountains of Vermont. The rugged highlands in western Massachusetts are known as the Berkshire Hills. Because of the uneven surface of the land, the New England rivers have many rapids and waterfalls. These falls furnish an abundance of power which is used to turn the wheels of mills and factories.

U. S. Geological Survey

Fig. 159. Bowlder-strewn hillside, in Massachusetts

Fig. 160. Conveying ice to a large ice house

Thousands of years ago a great glacier, or immensely thick sheet of ice, spread over New England from the north. It swept the soil from many of the hills and left the bare rocks exposed. In other places the soil and broken rock were spread over the land (Fig. 159). In the thin soils of the upland regions, and in the more stony glacial soils, the farmer cannot raise large crops, because there is too little fine earth to furnish plant food.

98. The Climate of New England.—The New England winters are usually very cold, except on the southern seacoast. The snow is deep and sometimes piles in great drifts in the roads and fence corners. During the winter, farmers take care of their stock and cut their wood, and lumbermen get out logs for the mills. The rivers and lakes are frozen over, and large quantities of ice are cut and stored for summer use (Fig. 160).

A part of the summer is warm; but it is generally comfortable in the mountains, in the woods of northern Maine, and along the coast where cool winds blow from the ocean. Crops seldom fail for lack of moisture, as there is plenty of rain during the growing season.

Review of Sections 96 to 98.—1. Name the states in this group. 2. Why was this group named New England? 3. How do these states compare in size with those in the southern and western parts of our country?

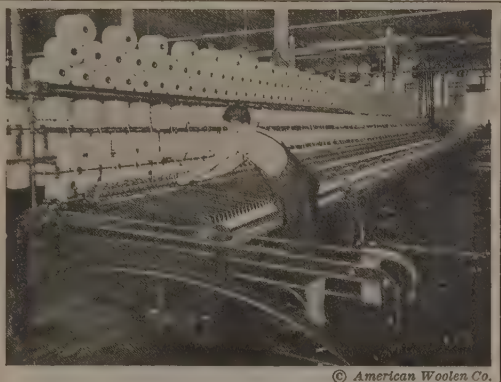
4. Where are the White Mountains? The Green Mountains? The Berkshire Hills? 5. Why are there so many waterfalls in the New England streams? 6. Of what use are they? 7. What was the effect of the glacier upon the soils of New England?

8. In what parts of New England are the winters cold? 9. What farm work is done in the winter time? 10. Where are the cool places during the warm summer months?

99. Manufacturing.—In spite of its small area and rugged surface, New England is a very important part of our country. It belongs to the great manufacturing region of the United States (Sec. 92), and has a large population. Raw materials from distant places in our own country, and from other parts of the world, are brought to its mills and factories to be manufactured.

When manufacturing began in New England, the waterfalls furnished the power needed to run the mills and factories. As a result, many important cities grew up around waterfalls. Now so much manufacturing is done in New England that coal is brought from other states to furnish additional power. Also, the power of many waterfalls is used to develop electricity, which is sent over wires to distant cities to furnish power, heat, and light.

100. Cotton and Woolen Goods.—Chief among the manufactures of New England are cotton and woolen goods. Most of the cotton comes from the southern states. The wool comes chiefly from the western states and from Australia and South America. Cotton goods are manufactured at *New Bedford*, *Fall River*, and *Lowell* in Massachusetts, *Pawtucket* in Rhode Island, and in many other cities. In some of these cities woolen goods also are made; but *Lawrence* in Massachusetts and *Providence* in Rhode Island are the most important centers for woolen manufacture (Fig. 161).



© American Woolen Co.

Fig. 161. Spinning yarn in a Massachusetts woolen mill

101. Leather Goods.—Another great industry is the manufacture of leather goods, especially boots and shoes. In the early days of the industry the hides used came from the animals raised in New England, or in the near-by states; and they were made into leather in tanneries that used bark from the New England forests. Now the industry is so large that hides and leather are brought from the western states, and from Europe, Asia, Australia, and South America.

Boston is the great leather market, and *Brockton*, *Lynn*, and *Haverhill* in eastern Massachusetts are the chief centers for the manufacture of boots and shoes (Fig. 162). There are also large shoe factories in *Manchester*, New Hampshire.

102. Manufactures in Metal.—Although there is but little mining in New England, many articles made of metal are manufactured in its factories. Most of these articles gain much of their value from the skillful work done on them.

The center of jewelry manufacture is *Providence*, Rhode Island. Cutlery and silverware are made at *Meriden* and *Bridgeport*, Connecticut, and watches at *Waltham*, Massachusetts, and at *Waterbury*, Connecticut. Other metal goods

Fig. 162. Finishing shoes in a New England shoe factory

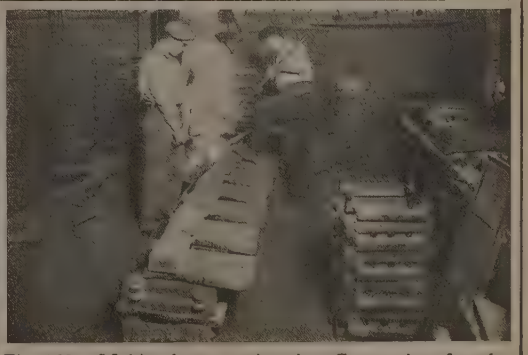


Fig. 163. Making brass castings in a Connecticut foundry

Fig. 164. Bales of wood pulp

manufactured in New England include hardware of all kinds, wire, brass goods, firearms, and machinery. The manufacture of metal goods is especially important in *New Haven*, *Bridgeport*, and *Hartford*, Connecticut, and in *Worcester* and *Springfield*, Massachusetts.

103. Paper.—Many years ago paper was usually made from rags. These were collected by men who traveled through the country with big wagons, going from village to village and from house to house. The rags were cleaned and sorted, and some of them were made into paper. The best grades of paper are still made from rags, especially in the mills at *Holyoke*, Massachusetts.

Most of the paper used for newspapers, magazines, books, and other purposes is now made from wood. For this use a soft wood, like spruce, is needed. The spruce forests of Maine, New Hampshire, and Vermont furnish many trees to the paper mills. The wood is ground or boiled to a pulp. The pulp is then freed from impurities and made into paper, which is wound into large rolls (Fig. 165).

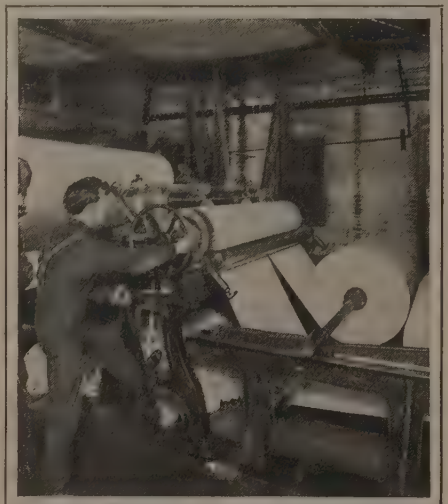


Fig. 165. Rolls of paper made for newspapers

Review of Sections 99 to 103.—1. What is the leading industry of New England? 2. What power was first used for it? 3. What additional power is now used, and where does it come from? 4. Where are the large cotton factories? Woolen factories? Boot and shoe factories? 5. Where do the raw materials used in the leather industries come from? The cotton? The wool? 6. What are some of the metal manufactures? 7. Where are they made? 8. From what is paper made?

104. Farming.—Although there are many farms in New England, it is, as a whole, not a good farming country. Much of the soil is too thin or stony to be cultivated, and there are hills whose sides are so steep that they cannot be plowed. In river valleys, however, the soil is deep, fine, and rich, and there is much good soil also on ridges and hills of low elevation. The population of New England is so large, and there is so much need of food, both for men and for beasts, that even some of the poorer soil is cultivated.

Large crops of hay are raised in all the states. Potatoes are raised, especially in Maine, and tobacco is cultivated in the Connecticut Valley, both in Connecticut and in Massachusetts. The New England orchards produce an abundance of apples and other fruits. Near the larger cities there are many small farms devoted to market gardening. They furnish peas, sweet corn, beans, squashes, tomatoes, onions, and other vegetables,

Fig. 166. Evaporator in which maple sap is boiled in making either sirup or sugar

as well as small fruits, to the people of the cities.

On nearly all New England farms there is some dairying, for much of the land that cannot be cultivated is used for pastures. The milk is sent either to factories to be made into butter and cheese, or to the city and sold. Many horses, sheep, hogs, and fowls are raised.

105. Forests and Forest Products.—Patches of woods are scattered over the higher and rougher parts of New England, and nearly every farm has a wood lot. Large forests are found only in Maine and in the mountain regions of New Hampshire and Vermont. Every year many of these trees are cut down and taken to mills to be made into pulp for paper, sawed into boards, or manufactured into wooden articles of various kinds. New England paper mills also use timber and pulp imported from other countries. *Bangor* and *Portland* are the leading lumber markets in Maine.

Throughout New England, but especially in Vermont, there are maple trees in the woodlands. Each spring these trees are tapped for the sweet juice, or sap, which then begins to come up into the trees from their roots. The tapping is done by boring a small hole a little way into the tree and putting in a spout, from which the sap drops into a bucket. The sap is usually gathered twice a day, and it is boiled until most of the water in it is evaporated. As it boils it grows thicker and sweeter, and finally becomes sirup. When the sirup is thick it is allowed to cool. If thick enough, it cools into maple sugar (Fig. 166).

106. Quarrying.—The rocks of New England furnish much valuable building stone. Fine, hard, gray granite (Fig. 167) is quarried in every state. It is used for buildings, monuments, curbstones, and pavements. An excellent quality of marble is found in Vermont, western Massachusetts, and Connecticut. *Proctor* and *Rutland*, Vermont, are great marble centers. Marble is much used in building.

Fig. 167. Granite quarry, Vermont

Fig. 168. Slate quarry, and piles of the thin slate used for roofing

Some of the marble is used for the outer walls, but more of it for interior work; it is used also for monuments and statues. Slate, a fine-grained rock that can be cut into large slabs or split into thin sheets (Fig. 168), is used in building. Slabs are used for school blackboards, and thin sheets are cut to a uniform size and used for roofing.

107. Fishing.—In the clear, cold waters off the coast of New England, and in the shallow waters near Newfoundland, there are great numbers of fish that furnish excellent food. For years fishing has been followed as a business by men of the seacoast towns and cities, especially in *Gloucester* and *Boston*, Massachusetts, and *Portland*, Maine.

Cod and halibut are found on the Banks of Newfoundland, as the shallows south of that island have been named. These fishing grounds are several hundred miles from home ports. Mackerel, herring, and bluefish are caught along the coast, and many oysters, clams, and lobsters are found near the shore.

When the fishing vessels (Fig. 169) return to port, some of the catch is sold fresh, and the rest is canned, dried (Fig. 170), or salted.

108. Country Homes and Summer Resorts.—In parts of New England the upland farms were deserted years ago because it did not pay to cultivate them. During the last few years city people have been buying such farms for country homes, where they may spend the hot summer months.

Fig. 169. Fishing boats, Gloucester

In many places, both on the coast and in the interior, summer hotels have been built. During the summer many thousands of people visit these resorts for rest and pleasure. Some of them are in the mountains, where one finds cool air and attractive scenery.

Fig. 170. Drying fish, Gloucester

Ewing Galloway

Fig. 171. Tremont Street, facing the Common, Boston

Some are in the woods and on the shores of lakes, where there are hunting and fishing. Others are on the seashore, where there are great rocks and dashing waves, or fine sandy beaches for bathers, and quiet protected waters for boating.

109. Commerce and the Cities.— Much of the material used by the New England factories is brought in from other parts of the world. Large quantities of manufactured goods are sent to distant points to be sold. A part of this trade is with countries across the ocean. More of it is with other parts of our own country and with Canada. All the larger places are connected with one another and with the seaports by railroads. On the map (Fig. 147), point out the railroads of New England.

From our own country the people of New England get food, cotton, some wool and hides, coal, iron, and other metals for use in manufacturing. From other parts of the world they get more wool and hides, and many other things. The trade with our own country and with Canada is carried on in coasting vessels and by rail. The trade with most foreign countries is carried on in great steamships.

Boston, the capital of Massachusetts, is the largest city and the greatest seaport of New England (Fig. 171). Through this port an enormous amount of commerce is carried on. The Cape Cod Canal (Figs. 157, 172) has shortened the route of ships plying between Boston and ports to the south. *Providence*, the capital of Rhode Island, is the second largest city of New England. *Portland*, in Maine, is another important seaport.

Review of Sections 104 to 109. — 1. What makes farming in New England difficult? 2. What crops are raised? 3. Why are poor soils sometimes cultivated? 4. Where are the farms devoted to market gardening? 5. Where is dairying carried on? 6. What is done with the milk?

7. Where are the forests? 8. For what are the trees used? 9. How are maple trees tapped? 10. What is done with the sap?

11. Where is granite quarried? Marble? 12. For what are they used? 13. For what is slate used?

14. Name three cities that have many fishermen. 15. What fish are caught? Where?

16. Where are the summer resorts? Why?

17. How is the trade of New England with other lands carried on?

Fig. 172. Cape Cod Canal

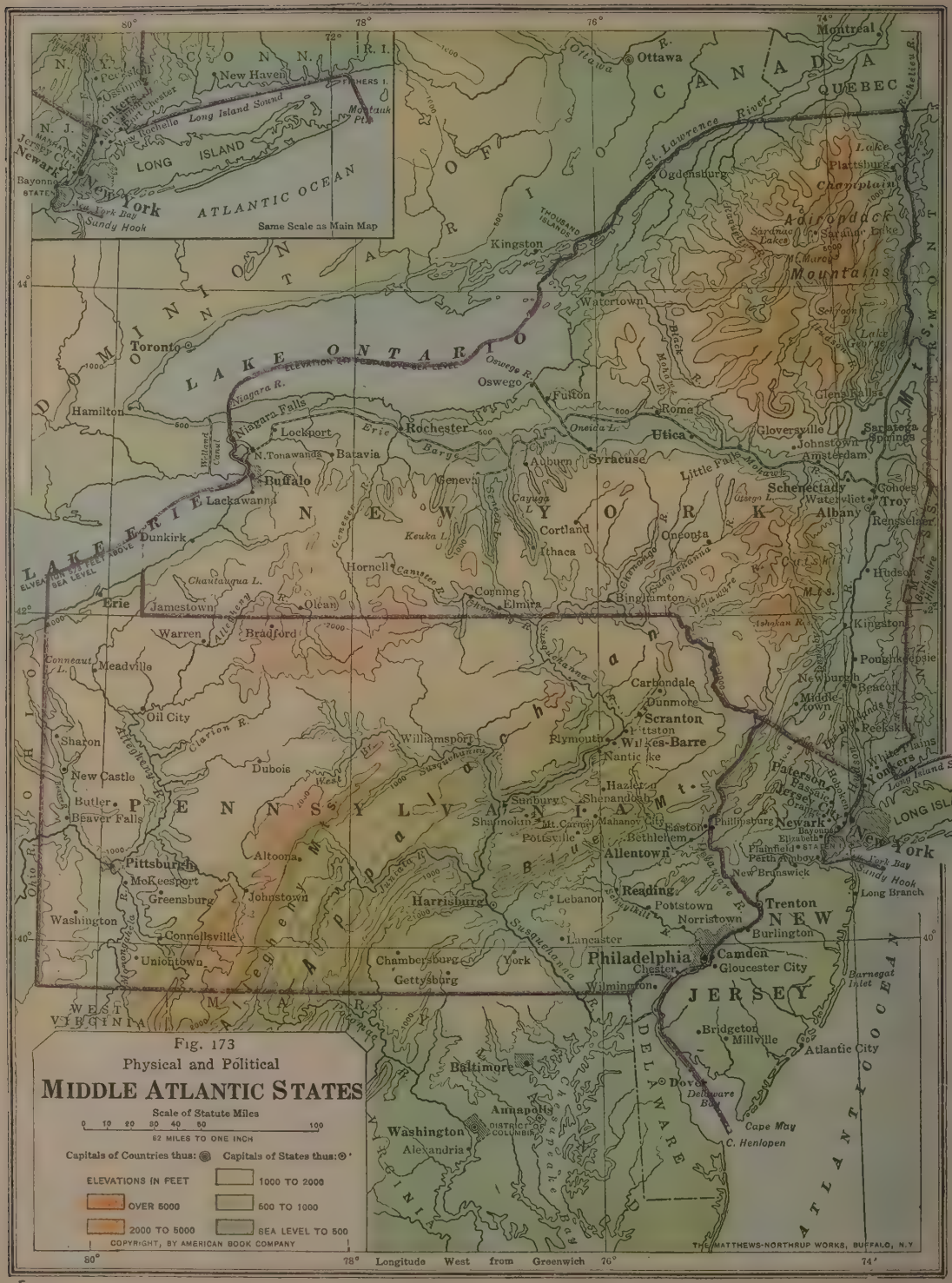


Fig. 173
Physical and Political
MIDDLE ATLANTIC STATES
Scale of Statute Miles
0 10 20 30 40 50 100
62 MILES TO ONE INCH
Capitals of Countries thus: ◎ Capitals of States thus: ⊙
ELEVATIONS IN FEET
OVER 5000
2000 TO 5000
1000 TO 2000
500 TO 1000
SEA LEVEL TO 500
COPYRIGHT, BY AMERICAN BOOK COMPANY
THE MATTHEWS-NORTHRUP WORKS, BUFFALO, N.Y.
Same Scale as Main Map
Longitude West from Greenwich
80° 78° 76° 74°
42° 40°
Ottawa
Montreal
QUEBEC
CANADA
Lake Champlain
Adirondack Mountains
Lake Ontario
Toronto
Hamilton
Kingston
Watertown
Ogdensburg
Oswego
Fulton
Rome
Utica
Syracuse
Auburn
Rochester
Niagara Falls
Lockport
N. Tonawanda
Batavia
Buffalo
Lackawanna
Dunkirk
Lake Erie
Erie
Jamestown
Warren
Bradford
Olean
Geneva
Cortland
Ithaca
Oneonta
Binghamton
Elmira
Corning
Hornell
Gloversville
Johnstown
Amsterdam
Saratoga Springs
Schenectady
Troy
Albany
Rensselaer
Hudson
Kingston
Poughkeepsie
Newburgh
Beacon
Middletown
Peekskill
White Plains
Yonkers
NEW YORK
Meadville
Oil City
Sharon
New Castle
Butler
Beaver Falls
Pittsburgh
McKeesport
Greensburg
Washington
Connellsville
Uniontown
Dubois
Altoona
Johnstown
Williamsport
Sunbury
Shamokin
Mt. Carmel
Pottsville
Hazleton
Shenandoah
Mahanoy City
Carbondale
Dunmore
Scranton
Wilkes-Barre
Plymouth
Nanticoke
Easton
Phillipsburg
Bethlehem
Allentown
Harrisburg
Lebanon
Reading
Pottstown
Norristown
Lancaster
Chambersburg
York
Gettysburg
Philadelphia
Chester
Wilmington
Camden
Gloucester City
Trenton
Burlington
Paterson
Passaic
Jersey City
Hoboken
Newark
Elizabeth
Bayonne
Plainfield
Perth Amboy
New Brunswick
Long Branch
Sandy Hook
Atlantic City
Barnegat Inlet
Bridgeton
Millville
NEW JERSEY
Baltimore
Annapolis
Washington
Alexandria
Dover
Delaware Bay
Cape May
C. Henlopen
Chesapeake Bay
Susquehanna R.
Delaware R.
Hudson R.
Mohawk R.
Allegheny R.
Monongahela R.
Ohio R.
Potomac R.
Juniata R.
Schuylkill R.
Lehigh R.
Raritan R.
Passaic R.
Hackensack R.
Housatonic R.
Connecticut R.
Thames R.
Long Island Sound
LONG ISLAND
New Haven
Bridgeport
Stamford
Norwalk
Fishers I.
Montauk Pt.
Long Island
Sandy Hook
Newark Bay
Jersey City
Hoboken
Staten I.
Bayonne
Elizabeth
Perth Amboy
Plainfield
Yonkers
Mt. Vernon
New Rochelle
Port Chester
Greenwich
Stamford
Norwalk
Bridgeport
New Haven
Meriden
Waterbury
Hartford
Springfield
Worcester
Providence
R. I.
Boston
Albany
Troy
Schenectady
Utica
Rome
Oswego
Syracuse
Rochester
Buffalo
Niagara Falls
Toronto
Kingston
Ottawa
Montreal
Quebec
Lake Ontario
Lake Erie
Lake Champlain
Lake George
Lake Placid
Saranac Lakes
Adirondack Mts.
Catskill Mts.
Green Mts.
White Mts.
Berkshire Hills
Taconic Mts.
Hudson R.
Mohawk R.
Erie Canal
Oswego R.
Black R.
Genesee R.
Seneca R.
Cayuga L.
Seneca L.
Oneida L.
Keuka L.
Chautauqua L.
Conneaut L.
Allegheny R.
Ohio R.
Monongahela R.
Beaver R.
Shenango R.
Mahoning R.
Muskingum R.
Tuscarora R.
Juniata R.
Susquehanna R.
Schuylkill R.
Lehigh R.
Delaware R.
Raritan R.
Passaic R.
Hackensack R.
Housatonic R.
Connecticut R.
Thames R.
Long Island Sound
Chesapeake Bay
Delaware Bay
Potomac R.
Shenandoah R.
Monongahela R.
Ohio R.
Allegheny R.
Clarion R.
Kiskiminetas R.
Conemaugh

THE MIDDLE ATLANTIC STATES

110. Size and Position.—The Middle Atlantic States are *New York*, *New Jersey*, and *Pennsylvania*. New York and Pennsylvania are each larger than any two of the New England States, but New Jersey is only about as large as Massachusetts.

The Middle Atlantic group lies between the Atlantic Ocean on the southeast and two of the Great Lakes and the St. Lawrence River on the north (Fig. 173). Which states are bordered by the Atlantic Ocean? Which states are bordered by Lake Erie? What states border New York on the east?

111. Surface.—Southern New Jersey is a part of the low, flat, sandy *coastal plain* that borders much of the Atlantic coast of the United States. Long Island, a part of New York state, may also be included in this plain, although its surface is somewhat rough where the ancient glacier left ridges and hills of clay, sand, and gravel. In southeastern New York, northeastern New Jersey, and southeastern Pennsylvania the land is low but hilly.

West of the hilly lowland is the northern part of the *Appalachian Mountains*. In eastern Pennsylvania the mountains are low ridges of nearly equal height, with narrow valleys between the ridges (Fig. 173). In these mountains large beds of hard coal, or *anthracite*, have been found.

On Figure 146 find the region known as the *Appalachian Plateau*. The word *plateau* means a broad highland region where the surface is nearly level. The rock layers under the surface of the Appalachian Plateau are nearly level, but the rivers have cut deep valleys, thus making the whole region hilly. In eastern New York this plateau reaches almost to the Hudson River, and is known as the Catskill Mountains. From the Hudson

Fig. 174. A small part of the city of New York. In the foreground are the Post Office and the Pennsylvania Railroad Station

Courtesy of Frank M. Williams, N. Y. State Engineer

Fig. 175. A lock on the Erie Barge Canal

the plateau stretches across southern New York and western Pennsylvania. In Pennsylvania this region contains great quantities of coal and iron ore.

In the western part of New York, north of the plateau and bordering Lake Erie and Lake Ontario, are the *Lake Plains*. This region is nearly level and very fertile. It is connected with the Hudson Valley on the east by the narrow valley of the Mohawk River. Across the plains and through the Mohawk Valley, a canal connects the Great Lakes with the Hudson River (Fig. 175).

North of the Mohawk Valley is the mountain group known as the *Adirondacks*. It is a region of forests and beautiful lakes. East of the Hudson the land is rough where the Berkshire Hills extend into New York from New England.

112. **Climate and Drainage.**— As the Middle Atlantic States lie a little farther south, their climate is somewhat milder than that of New England. The winters are cold and there is much snow, especially in the highlands. In the lowlands, the summers are often very warm, but it is usually cool in the mountains and at the seashore.

During the winter the snow gathers in the forests which cover the slopes of the northern Appalachians, especially in the Adirondacks and in the higher hills of the plateau. When the warmer weather comes, the snow melts slowly and helps to keep the streams full for a long time. Many of the streams have waterfalls.

The streams have worn deep valleys across the Appalachian Plateau, and have cut its surface into hills. In the mountain section east of the plateau, the streams have worn away the soft rocks and left hard layers standing as mountain ridges. Some of the streams, while wearing down the land, flowed across the hard layers and cut narrow valleys, or *water gaps*, across them (Fig. 176).

Among the larger rivers of this region are the Hudson and its chief tributary, the Mohawk. They are important because the valleys through which they

Fig. 176. Delaware Water Gap

flow form a low pass across the Appalachian region. The Delaware and Susquehanna rivers also are an aid to travel, for they cut through the mountains, and their tributaries reach far back into the plateau (Fig. 173). In western Pennsylvania there is another great river, the Ohio. Its tributaries flow down the western side of the plateau.

Fig. 177. Truck farming in New Jersey

The early settlers used these valleys in making their way inland. Now great railway lines have been built through them. These railroads join those in the east with those of the Mississippi Valley and connect with other lines to form through routes between the Atlantic and Pacific oceans.

The Adirondack region drains into the Hudson and Mohawk on the south and the Great Lakes and St. Lawrence on the north. The Lake Plains drain into the Great Lakes.

Review of Sections 110 to 112.—1. Name the states in the Middle Atlantic group.

2. Which part of New Jersey is in the coastal plain?

3. Where are the Appalachian Mountains? What mineral is found in them? 4. Where is the Appalachian Plateau? Why is it so hilly? 5. Of what region are the Catskill Mountains a part? 6. What part of New York state is occupied by this plateau? What part of Pennsylvania?

7. Where are the Lake Plains? What kind of land is that region? 8. How are the Lake Plains connected with the Hudson Valley?

9. Where are the Adirondack Mountains? 10. What group of hills is east of the Hudson River?

11. How does the climate of these states differ from that of New England?

12. Where have the streams cut water gaps? 13. Why is the Hudson-Mohawk Valley important? 14. What are the other important rivers? 15. For what are the river valleys used?

113. The Soils, Agriculture, and Dairying.—The soils on the lower hillsides, in the valleys, and on the Lake Plains are fine and deep.

Most of New York and a part of northern Pennsylvania and New Jersey were once covered by a great ice sheet or glacier. In its movement (Sec. 97) the glacier ground up rocks, and when it finally melted it left a sheet of stony soil in many places. In places that were never covered by the glacier, the soils have been brought by rivers, or formed by the breaking up of the rocks underneath (Sec. 14).

Both agriculture and dairying are important industries in the Middle Atlantic States. Wheat, corn, barley, oats, and potatoes are raised on the farms, and New York ranks as the second state in the Union in fruit raising. Apples, grapes, peaches, and other fruits are raised in the Hudson Valley, along the shores of the Great Lakes, and around the lakes in central and western New York. New Jersey and Pennsylvania also raise much fruit.

Truck farming, or market gardening, is carried on near all the larger cities, especially in New Jersey (Fig. 177), in southeastern Pennsylvania, and on Long Island.

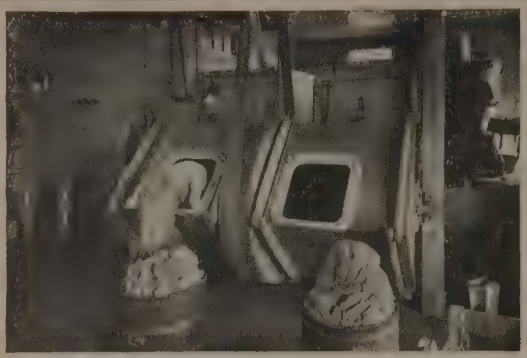


Fig. 178. Taking butter from a 350-gallon churn

Fig. 179. Coal mining regions of the United States

There are many dairy farms near the large cities and in the highland regions where the soil is poor and thin. The railroads in dairying districts have special trains to carry the milk to the cities. There are also many creameries and factories where butter and cheese are made (Fig. 178).

114. **Mineral Wealth.**—The Middle Atlantic States are rich in minerals. In Pennsylvania there are large deposits of coal. Nearly all the hard coal, or *anthracite*, of the country is found in eastern Pennsylvania. Much of the soft, or *bituminous*, coal is found in the southwestern part of the state, near Pittsburgh (Fig. 179). It burns more rapidly and with more smoke and gas than the anthracite, and is not so good a fuel. Railroads connect the coal fields with the other parts of the country and carry the coal to distant markets (Fig. 180).

Petroleum, or "rock oil," and natural gas are found in western Pennsylvania and southwestern New York. They are obtained by drilling wells into the rock. The oil is pumped to the surface, and is forced through great pipes (Fig. 181) to refineries, where kerosene, gasoline, and other products are made from it. The natural gas is piped into houses and factories and used for light and fuel.

Fig. 180. Coal in great heaps ready to be sent to market

Fig. 181. Petroleum tank and pipe line, Pennsylvania

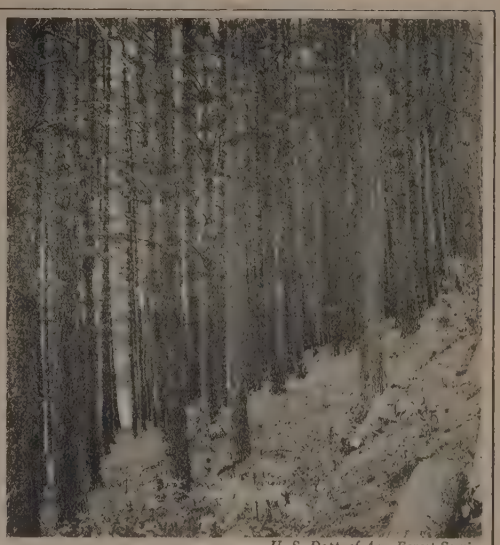
Iron ore is mined at several places in the Middle Atlantic States, chiefly in Pennsylvania.

Limestone and clays of Pennsylvania and New York are used in making cement, brick (Fig. 182), and tile. The sandstone and marble of New York, and the slate of Pennsylvania, are used in building.

Western New York has beds of rock salt, reached mainly by boring. Water poured down these wells dissolves the salt, and the brine is pumped up and evaporated.

115. Forests.—The great forests that once covered this part of our country have been cut away. The Adirondack region, however, is still well covered (Fig. 183), and there is much woodland in other parts of the Appalachian Mountains and on the Appalachian Plateau. The timber supply is decreasing, but lumbering and the manufacture of wood pulp and paper are still carried on.

Fig. 182. Machinery conveying dried bricks and setting them in the burning kiln



U. S. Dept. of Ag., Forest Service

Fig. 183. White pine forest in the Adirondacks

116. Manufacturing.—Many conditions have combined to make the Middle Atlantic States one of the chief manufacturing regions of our country. The products that we have so far studied are the raw materials from which many articles are made. Ocean-going vessels can reach both Philadelphia and New York. Railroads through the river valleys connect the cities of the great central plain with these two ports. A water route that includes the Hudson River, the Erie Barge Canal, and the Great Lakes, connects the interior of the country with the port of New York. Over these routes raw materials can be brought to the mills and factories, and manufactured goods can be sent to all parts of the world.

Fig. 184. The city of New York and vicinity

Review of Sections 113 to 116.—1. What different kinds of soil do we find in the Middle Atlantic States? 2. What crops are raised? 3. Where are the dairying regions? 4. How is milk taken to the cities?

5. Where is hard coal found? 6. Why are these deposits so important? 7. Where is soft coal found? 8. Where is petroleum found in the Middle Atlantic States? 9. How is it sent to the refineries? 10. Into what is it made? 11. Where are cement and bricks made? 12. Where is salt found?

13. What use is made of the forests? 14. What are some of the causes that have helped to make the Middle Atlantic States a great manufacturing region?

117. City of New York.—The city of *New York*, at the mouth of the Hudson River, has a beautiful harbor and is the largest city in the New World. Many great railway lines center there, and to its docks come ships from every sea. Many people who work in this city live in the cities and smaller places on Long Island, in New Jersey, in Connecticut, and in the mainland of New York state, especially along the Hudson. The city of New York, sometimes called *Greater New York*, now includes five boroughs: Manhattan, Brooklyn, the Bronx, Queens, and Richmond (Fig. 184).

The piers around the lower end of Manhattan Island do not provide room enough for all the ships that come to this port. Other piers have therefore been built on the Long Island and New Jersey shores. Railroads from the north and northeast cross from the mainland on bridges. Some railroads enter Manhattan through tunnels from Long Island and from New Jersey (Fig. 185). Others from the south and west end on the New

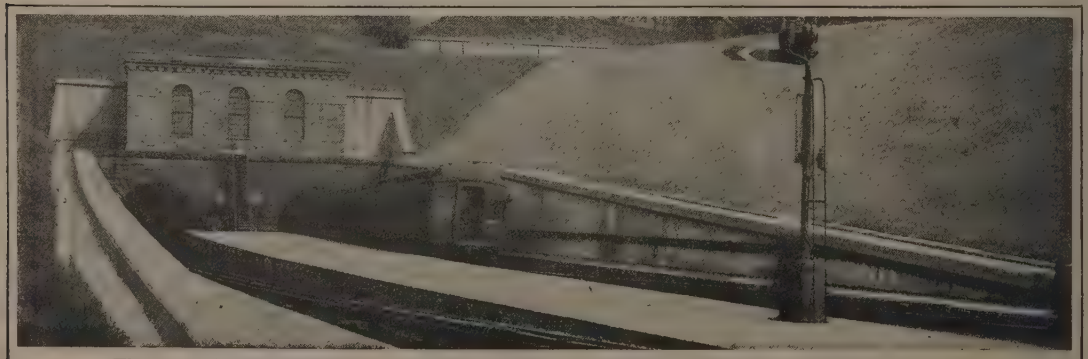


Fig. 185. Train entering a tunnel in New Jersey, to pass under the Hudson River to New York

Fig. 186. Shirt factory, Troy

Fig. 187. Making typewriters, Syracuse

Jersey side of the Hudson River and use ferries for both passengers and freight. About one half of the foreign trade of the United States passes through the port of New York.

Street cars, elevated trains, and trains in underground tunnels, or subways, are all used to carry people from one part of the city to another.

New York is not only the greatest commercial city, but also the greatest manufacturing city, in America. It leads especially in the manufacture of clothing, and in the printing of books and magazines. It also carries on an enormous number of other industries on a large scale. In Brooklyn there are several sugar refineries.

118. Other Cities of New York State. —From New York there are several routes that lead to the west, and along each of them are large cities with important industries. One of these routes leads up the Hudson and west through the valley of the Mohawk River and across the Lake Plains to Lake Erie.

Near the mouth of the Mohawk River are *Albany*, the state capital, and *Troy*, a city noted for the manufacture of collars, cuffs, and shirts (Fig. 186).

West of Albany is *Schenectady*, where much electrical machinery is made. Farther west is *Utica*, an important railroad center and the center of a rich farming region. Utica also has large cotton mills. Still farther west is *Syracuse*. This city is located where several railroads meet, and it carries on much trade with all the surrounding region. It has large factories where automobiles and typewriters are made (Fig. 187).

West of Syracuse is *Rochester*. This city is the third in size in the state, and it has large factories. Its chief industries are the making of clothing, photographic supplies, and boots and shoes. Rochester is also noted for its nurseries where fine trees and plants are grown (Fig. 188).

Fig. 188. Nursery at Rochester

Buffalo, the second city of the state in population, is important both as a commercial and as a manufacturing city. Much of the trade on the Great Lakes centers here, as does also the trade that passes over the Erie Barge Canal. Buffalo handles grain, live stock, and lumber from the West, and has large flour mills. One of the largest steel plants in the world is located near this city. Part of the electricity used in Buffalo, and in a number of other cities in western New York, is produced at the Niagara Falls, where the waters of the Niagara River plunge over a cliff 160 feet high and nearly a mile wide (Fig. 189).

Fig. 189. Niagara Falls

119. Cities of Pennsylvania and New Jersey.—One of the chief routes from New York leads southwest and then westward across New Jersey and Pennsylvania to the Ohio River (Fig. 173).

The largest city along this route is *Philadelphia*, in eastern Pennsylvania. It is third in size among the cities of the United States, and is a great center both of trade and of manufacture. Its chief industries are ship building, the refining of sugar and of petroleum, and the manufacture of woolen, cotton, leather, iron, and steel goods (Fig. 190).

West of Philadelphia, on the Susque-

Fig. 190. Locomotive works and factories, Philadelphia

Fig. 191. Steel works, Pittsburgh

hanna River, is *Harrisburg*, the capital of Pennsylvania, with large steel mills.

Pittsburgh, on the Ohio River, and the group of smaller cities around it, are engaged in the manufacture of iron and steel goods and glass. The fuel for the furnaces comes from the coal fields and natural gas wells, and large quantities of iron ore are shipped in from mines in the Lake Superior region.

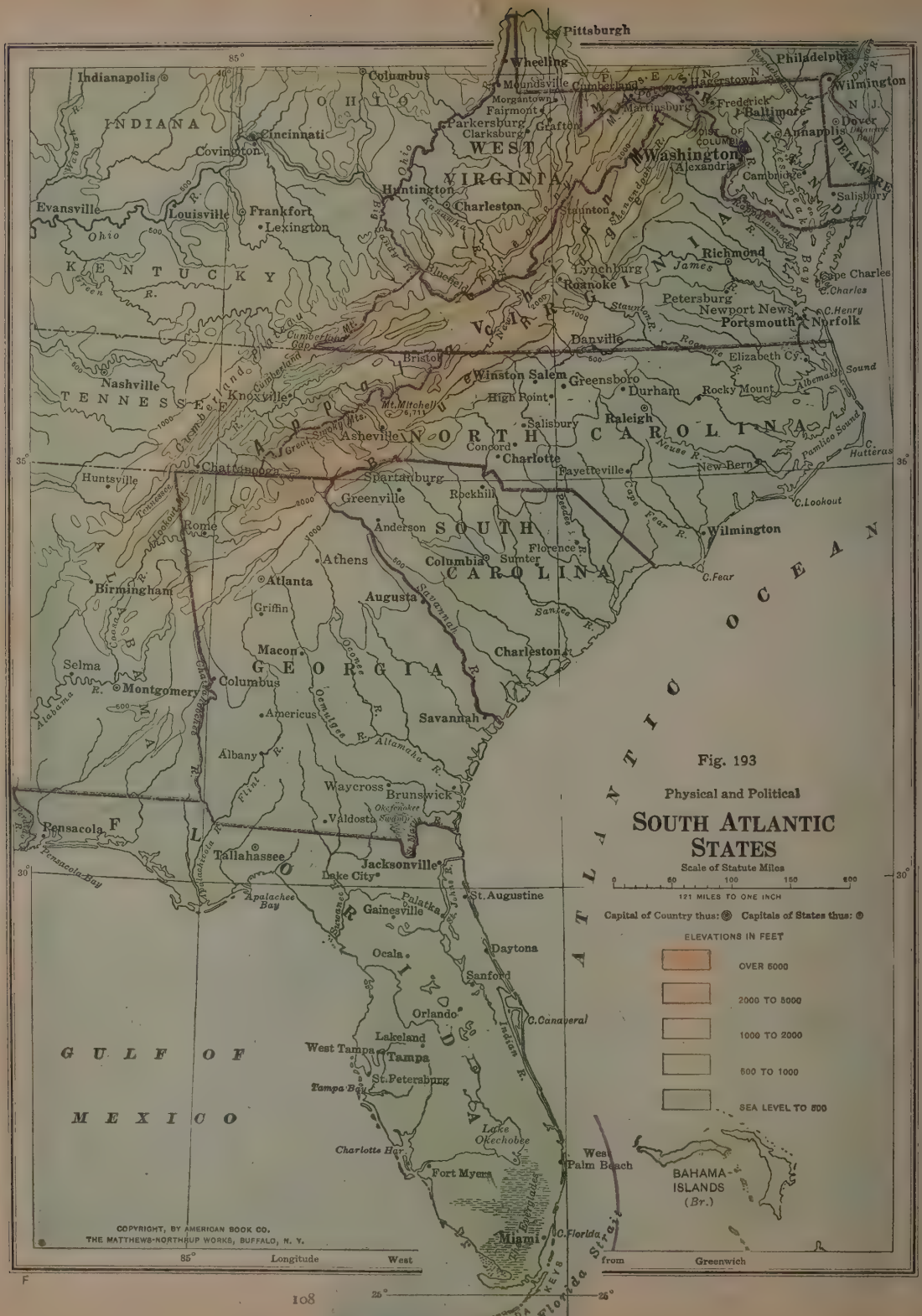
Scranton is a large city in the hard coal district of Pennsylvania. *Reading* manufactures knit goods, iron and steel, and machinery. *Erie*, a port on Lake Erie, has flour mills and iron and steel manufactures.

In New Jersey, *Paterson* has large silk mills; *Trenton*, the capital, is known for its rubber products and pottery; *Camden* has a talking machine factory (Fig. 192); and *Newark*, the largest city of the state, has a variety of manufacturing industries, including leather, the refining of copper, and the making of electrical machinery.

120. Summer Resorts.—At many of the shore resorts of Long Island and New Jersey there is excellent sea bathing, with cool winds from the ocean during the hot summer days. The mountain resorts also are popular, especially during the season for hunting and fishing.

Review of Sections 117 to 120.—1. Why is the city of New York so important as a trade center? 2. What are its leading manufactures? 3. Name the chief cities along the Hudson and Mohawk Valley and Lake Plains route to Buffalo. 4. Why is Buffalo important? 5. Where are the Niagara Falls? Why are they important? 6. What are the chief manufacturing industries of Philadelphia? 7. For what industries is Pittsburgh noted? Paterson? Trenton? Newark? 8. Where are the summer resorts?

Fig. 192. Testing talking machines, Camden


Pittsburgh
Wheeling
Philadelphia
Wilmington
Indianapolis
Columbus
Cincinnati
Covington
Morgantown
Fairmont
Parkersburg
Clarksburg
Grafton
Cumberland
Harrisburg
Fredrick
Baltimore
Annapolis
Dover
Washington
Alexandria
Cambridge
Salisbury
Huntington
Charleston
Staunton
Evansville
Louisville
Frankfort
Lexington
Lynchburg
Richmond
Roanoke
Cape Charles
Petersburg
Newport News
Portsmouth
Norfolk
Danville
Bristol
Elizabeth Cy.
Nashville
Knoxville
Winston Salem
Greensboro
Durham
Rocky Mount
High Point
Raleigh
Asheville
Salisbury
Concord
Charlotte
Fayetteville
New Bern
Chattanooga
Huntsville
Spartanburg
Greenville
Rockhill
Anderson
Florence
Sumter
Columbia
Wilmington
Rome
Athens
Atlanta
Birmingham
Augusta
Griffin
Macon
Charleston
Selma
Montgomery
Columbus
Americus
Savannah
Albany
Waycross
Brunswick
Valdosta
Pensacola
Tallahassee
Jacksonville
Lake City
St. Augustine
Palatka
Gainesville
Daytona
Ocala
Sanford
Orlando
Lakeland
West Tampa
Tampa
St. Petersburg
Tampa Bay
Lake Okechobee
Fort Myers
West Palm Beach
BAHAMA ISLANDS (Br.)
Miami
C. Florida
Florida Straits
Key West
FLORIDA KEYS
GULF OF MEXICO
ATLANTIC OCEAN
Fig. 193
Physical and Political
SOUTH ATLANTIC STATES
Scale of Statute Miles
121 MILES TO ONE INCH
Capital of Country thus: ◉ Capitals of States thus: ⊙
ELEVATIONS IN FEET
OVER 5000
2000 TO 5000
1000 TO 2000
500 TO 1000
SEA LEVEL TO 500
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Longitude West from Greenwich

U. S. Dept. of Ag., Forest Service

Fig. 194. Foothills of the Appalachian Mountains in North Carolina

THE SOUTH ATLANTIC STATES

121. Position and Coast Line.—The South Atlantic States are the eight states south of Pennsylvania; namely, *Delaware*, *Maryland*, *Virginia*, *West Virginia*, *North Carolina*, *South Carolina*, *Georgia*, and *Florida* (Fig. 193). Which one has the longest coast line? Which one has no seacoast? Which six are partly in the Appalachian Mountains?

At the north, large bays indent the coast and furnish good harbors. On these bays and the large rivers that flow into them boats can be used for a long distance inland. Farther south the coast is more regular, and there are not so many good harbors. A little distance off the shore there are long, sandy beaches, many miles in length. They are called *barrier beaches* because they shut off the quiet waters behind them from the ocean in front. In the quiet, protected waters behind the barrier beaches boats make long voyages in safety, even during storms that would make an ocean voyage unsafe.

122. Surface.—Name the seven South Atlantic states that border on the Atlantic Ocean. A large part of the land in this group lies in the coastal plain.

West of the coastal plain is a region of older and harder rocks. It is known as the *Piedmont Plateau;* "Piedmont" means "foot of the mountain." Its surface is more uneven than that of the coastal plain, and it lies somewhat higher.

Find the rivers that flow across these two regions on their way to the ocean (Fig. 146). Where they descend from the Piedmont to the coastal plain there are rapids or falls that furnish water power for many factories. Because of these waterfalls, the eastern edge of the Piedmont is known as the *Fall Line*.

West of the Piedmont region are the Appalachian Mountains (Fig. 194). The eastern range is the Blue Ridge. It was so named by the early settlers, who saw it first at a distance, when it seemed to be blue. Beyond the Blue Ridge is a long, broad valley, called the Great Appalachian Valley; and still farther west are several other mountain ranges.

123. **Climate.**—In the northern part of this group of states the winters are cool, but there is seldom much snow on the ground. In southern Florida, even in the winter, it is usually warm and pleasant. The summers throughout the region are warm, although it is cooler in the mountains than on the coastal plain. The yearly rainfall is heavy (Fig. 145), as the winds from the ocean and from the Gulf of Mexico bring much moisture with them.

Fig. 195. Tobacco field, Virginia

Review of Sections 121 to 123.—1. Name the seven South Atlantic states that are partly or entirely within the coastal plain. 2. Which South Atlantic state does not touch the coastal plain? 3. Which states have many good harbors? 4. Where are there barrier beaches?

5. Where is the Piedmont region? 6. What is the Fall Line? 7. Where are the Appalachians, in this group of states?

8. Which are the cooler parts of the South Atlantic region in summer? 9. What kind of winters does Florida have?

124. **Agriculture.**—In these states agriculture is the leading industry. Three important crops are tobacco, corn, and cotton.

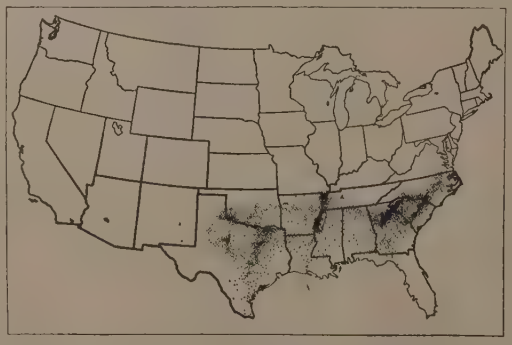

Fig. 196. Cotton-raising region of the United States

Tobacco was first cultivated in Virginia, and it is now raised in all the South Atlantic States, — especially North Carolina and Virginia, — as well as in many other parts of the country.

Corn is the chief grain crop in every South Atlantic state, but wheat also is grown in the northern states of the group.

Cotton is by far the most important crop in North Carolina, South Carolina, and Georgia (Fig. 196). In many sections nearly all the farms or plantations are devoted to this one crop. The cotton plant grows about three or four feet high, and bears many seed pods, or bolls. When ripe, the bolls burst, and the masses of lint or white fibers that they contain are gathered by the pickers (Fig. 197). The seeds are removed by machinery, and the lint is then pressed into bales and sent to the mills (Fig. 208), where it is made into thread and cloth (Fig. 201).

Sea island cotton, which has a long, fine fiber, was formerly grown along the coast of South Carolina, Georgia, and Florida and on some islands near the coast. In recent years many of the crops have been destroyed by the cotton boll weevil. Because of this a new long-fibered upland cotton is now largely raised instead of the sea island.

Fig. 197. Picking sea island cotton, Georgia

Many of the southern negroes find work in the cotton fields. Their ancestors came from a hot country, and the negroes are able to do hard work out of doors even during the hottest weather.

On the truck farms of the southern part of the coastal plain, vegetables and berries are raised even in winter. There are large orange and grapefruit groves in Florida, and pineapples and alligator pears also are raised in that state (Fig. 198). Vegetables and fruits from the South are carried by fast trains and steamships to the northern markets.

Large crops of peanuts are grown in Virginia, North Carolina, and Georgia.

125. Forests and Minerals.—The pine trees of the coastal states are tapped for their sap, which is made into turpentine and rosin (Fig. 199). Florida and Georgia lead in this industry. There are great hard-pine forests in several states. This Georgia pine, as it is called, is much used for interior woodwork and for flooring. Such hardwood trees as the oak and maple grow chiefly in the mountains and at the north.

In West Virginia are found soft coal, petroleum, and natural gas. There is also coal in Virginia and western Maryland. Florida has valuable deposits of phosphate rock, which is mined and sold for use in making fertilizer.

Fig. 198. A pineapple field in Florida

Fig. 199. Turpentine distillery, South Carolina

126. Oyster Fisheries.—The most extensive oyster beds in the United States are in the Chesapeake Bay. Young "seed oysters" can move about in the water, but they soon fasten themselves to some pebble or old oyster shell. A few oysters are still taken from natural beds as they have been for many years. Most of them are now raised in beds made by covering the sea bottom with oyster shells or gravel. The oystermen go out in small boats to gather the oysters with long-handled tongs (Fig. 200). Some of the oysters are taken from the shells and canned; others are packed in ice and shipped fresh even to distant cities. *Baltimore* is the center of the oyster industry of this group of states.

Fig. 200. Gathering oysters, Chesapeake Bay

Review of Sections 124 to 126.—1. Name three important crops of this group of states. 2. Where is wheat grown? Corn? 3. Name two states that grow much tobacco; three that grow much cotton. 4. Tell about the growth of the cotton plant. 5. What is done with the cotton lint after it is picked? 6. Where is sea-island cotton grown? 7. Why is it more valuable than upland cotton?

8. Where are there truck farms in this group of states? 9. What fruits are raised in Florida? 10. Where do some southern fruits and vegetables find a market? 11. How are they taken to this market?

12. What is made from the pitch of the pine tree? 13. What states lead in the industry? 14. Of what use is the hard southern or Georgia pine? 15. Where are the hardwood forests of the South Atlantic States? The coal fields? Petroleum and natural gas? Phosphate rock?

16. Where are oysters found? How are they gathered? What is done with them? 17. What city is the center of the industry?

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Fig. 201. Cotton mill in South Carolina. In this room cotton yarn is spun into thread

127. Manufacturing. — Until a few years ago, most of the cotton raised in the southern states was sent to the northern states or to Europe to be manufactured. This was because the southern people had not learned how to do the work, and because they thought that it could be done better in a cooler climate.

Now, however, more cotton is manufactured in the South than in the North. Power to run the southern cotton mills is furnished by the falls and rapids along the Fall Line, and by coal from the mines not far away. Nearly all the southern states are engaged in this industry, but the greatest mills are in North Carolina, South Carolina, and Georgia.

128. Trade and the Cities.—For many years nearly all the trade of the southern states, not only with European countries, but also with the North, was carried on through its seaports. Since railroads were built, much of the trade with the North has been carried on over them.

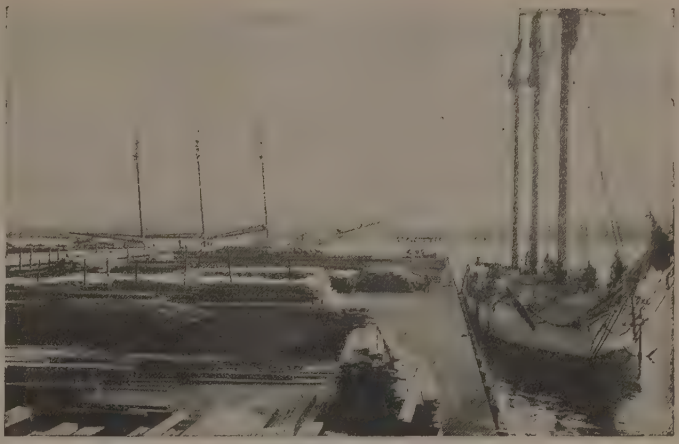


Fig. 202. Loading lumber at a Florida seaport

The seaports are among the largest and most important of the southern cities. *Tampa*, in southwestern Florida, on the Gulf of Mexico, has a large trade with the West Indies. *Jacksonville*, Florida, ships fruit, lumber, and garden truck. *Savannah*, Georgia, *Charleston*, South Carolina, and *Wilmington*, North Carolina, ship much cotton and lumber. *Norfolk*, Virginia, ships cotton, lumber, and garden truck.

Baltimore is the chief seaport and the largest city in the South Atlantic group, and one of the eight largest cities of the country. It is near the coal fields of eastern Pennsylvania, and has great canning factories and manufactures of iron and steel goods, clothing, and fertilizers.

In *Wilmington*, Delaware, ships and cars are built and powder is manufactured. This city contains nearly half of the population of the state, and is only a few miles from Philadelphia. In what state is there another city named Wilmington?

Wheeling, in West Virginia, is on the Ohio River, not very far from Pittsburgh. Its chief manufactures are iron and steel. *Richmond*, the capital and chief city of Virginia, is a famous market for tobacco, and has many factories for its manufacture.

The rapid development of manufacturing in the South has led to the growth of inland towns and cities located near coal deposits or water power. Of these the greatest is *Atlanta*, in northern Georgia, at the southern end of the Appalachian Mountains. It is an important railroad center. Some large cotton mills and many other factories are located here.

The coast cities of Florida are popular as winter resorts for northern people who dislike the cold northern winters.

Fig. 203. Railroad crossings in Richmond

129. The District of Columbia and the National Capital.—For many years the offices of the national government have been located in Washington, a city that was named after the first President of the United States. The District of Columbia is a tract of land on the north side of the Potomac River (Fig. 193) between Maryland and Virginia. Here the national capital, Washington, has grown to be a large and splendid city. It contains many public buildings. In the Capitol, Congress meets each year. The White House is the home of the President. The Congressional Library is one of the most beautiful buildings in our country (Fig. 204).

One department whose work is useful to the farmers and to us all is the Department of Agriculture. Here are officials who test foods to see if they are pure, and help farmers to find out what crops can best be grown in any place.

Washington is a city of hotels and homes. It has few manufactures and little trade. Many of the government officers live here during their terms of office. Because so many people have business with our government, and because of the interesting things to see in Washington, thousands of people visit the city every year.

Review of Sections 127 to 129.—1. Where did the southern people formerly send their cotton for manufacture? 2. Where have new mills been built?

3. Name some southern seaports and tell where they are situated. 4. Which is the largest city in the South Atlantic group? What work is done there? 5. What city is near Philadelphia? For what is it noted?

6. Where is Wheeling? What are its chief industries? 7. What city is the capital of Virginia? For what is it noted? 8. What large inland city has grown up in northern Georgia? Why is it important?

9. Where is our national capital? 10. After whom was our capital city named? 11. Name some of the public buildings located there.

Fig. 204. Airplane view of Washington. The Capitol has a large dome, and the Congressional Library a small dome. The other two large buildings contain the office rooms of members of Congress

Fig. 205. Modern cotton warehouse at New Orleans. An electric traveling crane is used in handling the bales

THE SOUTH CENTRAL STATES

130. Position.—There are eight South Central States: *Kentucky*, *Tennessee*, *Alabama*, *Mississippi*, *Arkansas*, *Louisiana*, *Oklahoma*, and *Texas* (Fig. 206).

Which of these states border on the Gulf of Mexico? Which states are entirely east of the Mississippi and border on that river? Which states are west of the Mississippi River? Which state in this group extends farthest north? The northern boundary of Kentucky is formed by the northern bank of the Ohio River. Into what river does the Ohio flow?

131. Surface and Drainage.—The Appalachian Mountains border Tennessee on the east and extend into northern Alabama. West of the mountains is a part of the Great Appalachian Valley. It is broad and fertile.

West of the Great Appalachian Valley, in eastern Kentucky, central Tennessee, and northern Alabama, is the southern part of the Appalachian Plateau, here known as the Cumberland Plateau. The edge toward the Great Valley is steep, and the plateau surface has been much cut up by rivers. On the west, however, the plateau slopes gently down to the plains of the Mississippi River.

There is another highland region in western Arkansas and eastern Oklahoma (Fig. 206). In western Texas there are great plateaus and the highest mountains in this group of states.

Highlands, however, form only a small part of the surface of the South Central States. The larger part consists of plains. Those in southern Alabama, in a part of Mississippi, and along the coast of Texas are coastal plains. They are known as the Gulf Plains because they border on the Gulf of Mexico. Many of the other plains of the region are flood plains or delta plains that have been formed by the Mississippi River and its tributaries. Eastern Arkansas, Louisiana, and much of Mississippi are lands that were formed in this way.

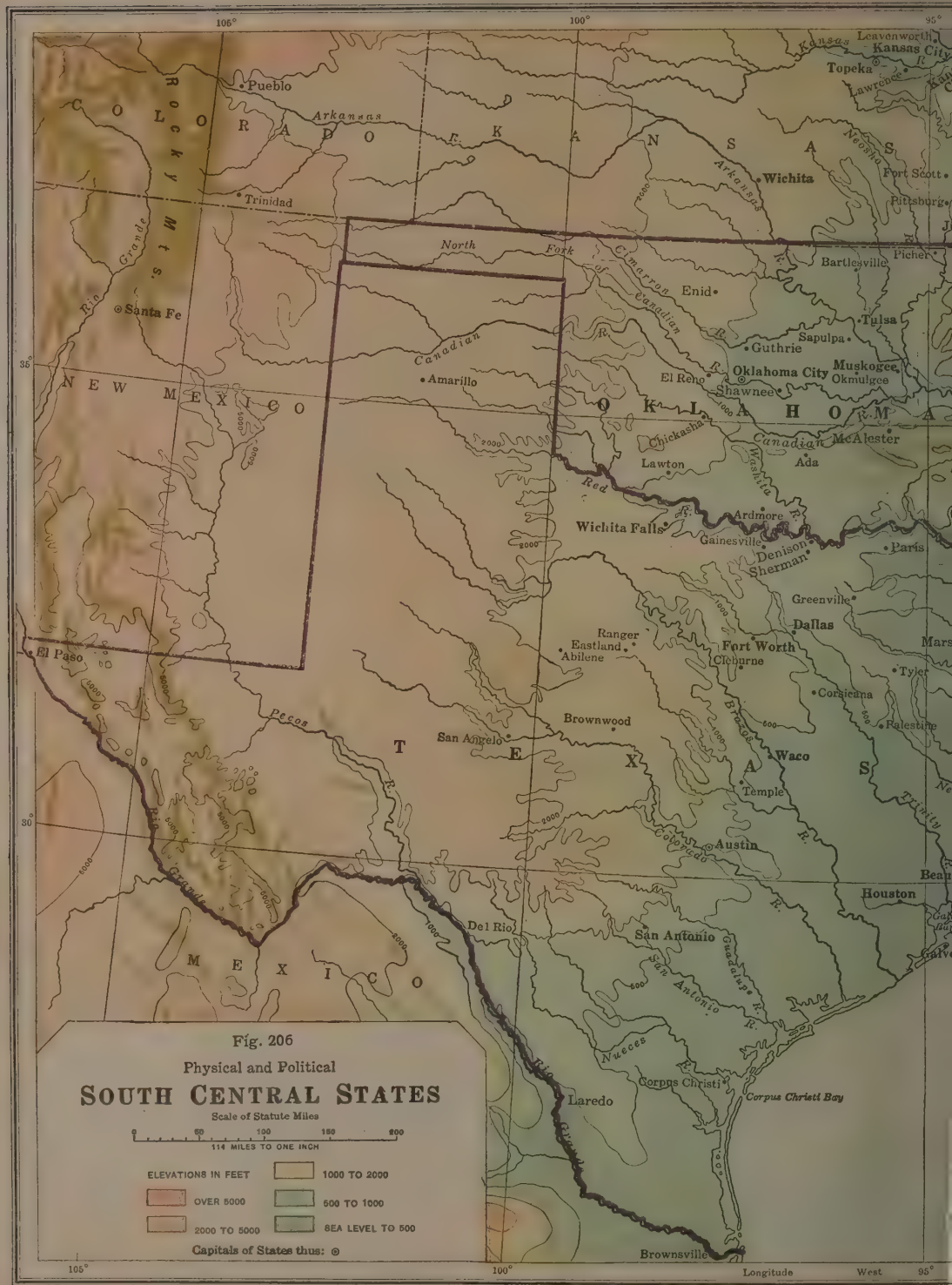
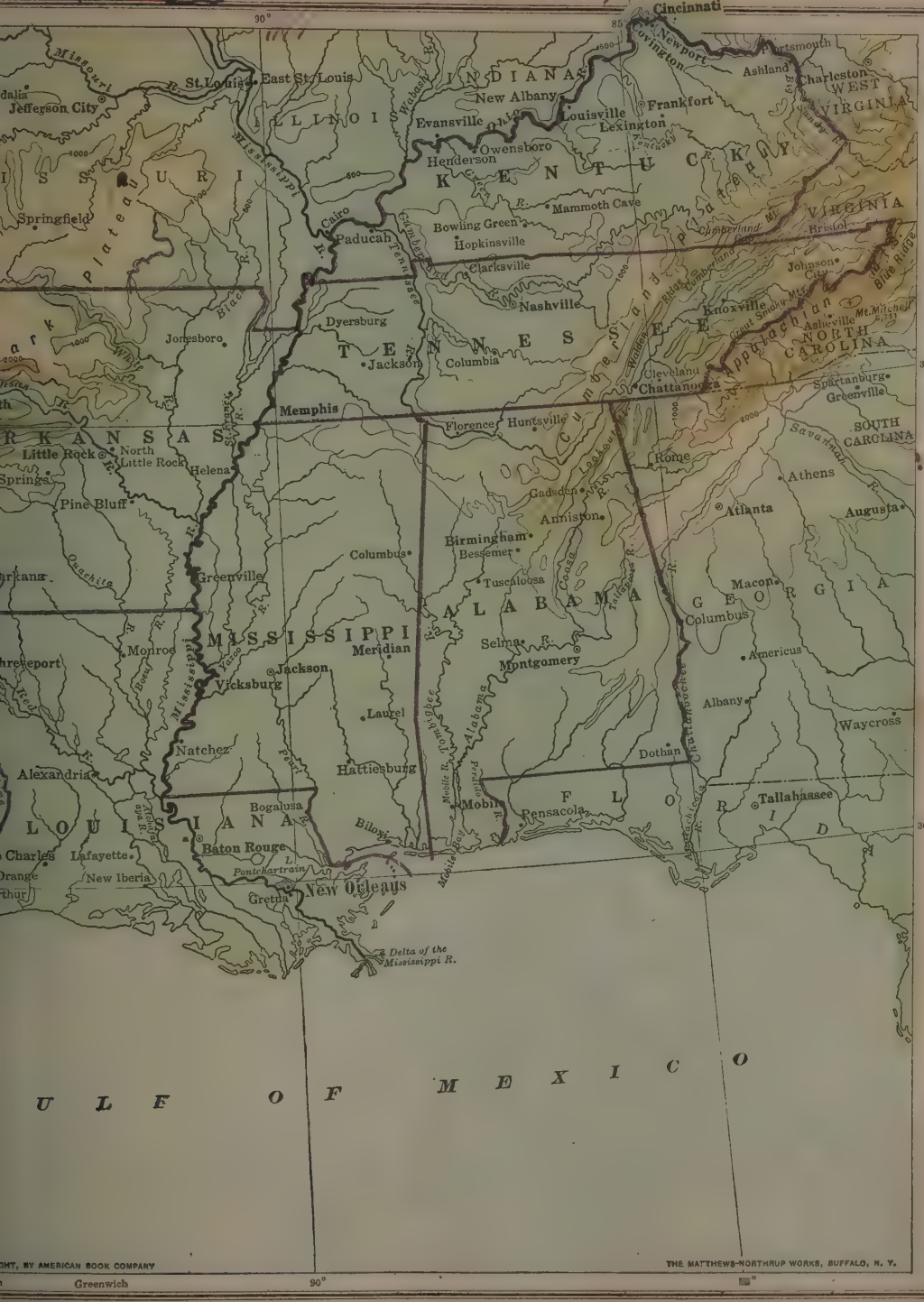


Fig. 206
Physical and Political
SOUTH CENTRAL STATES
Scale of Statute Miles
0 50 100 150 200
114 MILES TO ONE INCH
ELEVATIONS IN FEET
OVER 5000
2000 TO 5000
1000 TO 2000
500 TO 1000
SEA LEVEL TO 500
Capitals of States thus: ⊙
COLORADO
NEW MEXICO
OKLAHOMA
TEXAS
KANSAS
MEXICO
Rocky Mts.
Pueblo
Trinidad
Santa Fe
Amarillo
El Paso
Wichita
Topeka
Kansas City
Leavenworth
Fort Scott
Pittsburg
Bartlesville
Enid
Tulsa
Sapulpa
Guthrie
Oklahoma City
Muskogee
Okmulgee
El Reno
Shawnee
Chickasha
McAlester
Ada
Lawton
Ardmore
Wichita Falls
Gainesville
Denison
Sherman
Paris
Greenville
Dallas
Fort Worth
Cleburne
Ranger
Eastland
Abilene
Tyler
Corsicana
Palestine
Waco
Temple
Brownwood
San Angelo
Austin
Houston
Del Rio
San Antonio
Laredo
Corpus Christi
Corpus Christi Bay
Brownsville
Arkansas R.
Canadian R.
North Fork of Canadian R.
Cimarron R.
Red R.
Washita R.
Brazos R.
Colorado R.
Trinity R.
Pecos R.
Rio Grande
Nueces R.
San Antonio R.
Guadalupe R.
105°
100°
95°
35°
30°
Longitude West



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Mississippi River Commission

Fig. 207. Levee on the Mississippi River, in the state of Mississippi. In the distance is a river steamboat. Notice that the water in the river is higher than the road beside the levee

Flood plains and deltas have been built up out of sediment deposited by the rivers, and the soils are fine, deep, and very rich. Much sediment has been deposited along the lower course of the Mississippi near the stream banks. In some places the banks have been built higher than the bordering plains. In places also the sediment deposited has built up the river bed so that the river is now above the level of the surrounding country (Fig. 207). For long distances it has been necessary to build banks, or *levees*, to hold the river in its channel. When a levee is broken in time of flood, the water spreads over the low plains and does great damage.

Most of the drainage of this group of states reaches the Gulf through the Mississippi River. East of this river, however, there are a few streams that flow from the southern end of the Appalachian Mountains to the Gulf. West of the Mississippi also there are a number of streams that flow directly into the Gulf. Some of them are quite long, but they are not of much importance because during the dry season there is little water in them.

132. Climate.—The map (Fig. 145) shows that the eastern and southern parts of this group of states have a heavy rainfall. Toward the north the rainfall is somewhat less, and it decreases rapidly toward the far west. It is on account of the small rainfall in western Texas that some of its rivers have so little water in them.

Where the rainfall is very light, crops can be grown with the aid of water from wells or rivers. The water is stored in reservoirs and spread over the fields by means of ditches. This is *irrigation*. There are, however, large grassy plains which cannot be irrigated, but are excellent for grazing. There is another way to raise good crops in regions of light rainfall. This is called *dry farming*. The soil is plowed deep to retain moisture and the surface is cultivated to prevent evaporation.

The temperature in the southern part of the group does not change greatly with the seasons, and there are few frosts. In the northern part there is a marked difference in temperature between winter and summer, with snow and ice in the winter. The highlands are, of course, cooler than the lowlands.

Review of Sections 130 to 132. —1. Name the states in the South Central group. 2. Which border on the Gulf of Mexico? 3. Which one is the largest (Fig. 206)? 4. Which one has the Ohio River for much of its northern boundary? 5. Where is Oklahoma?

6. Where are the Appalachian Mountains in this group? 7. Where is the Great Appalachian Valley? The Cumberland Plateau? 8. Where do the Appalachian Mountains end? 9. Where is the Ozark Plateau?

10. Which states have Gulf Plains? 11. What kind of plains are there in Arkansas, Louisiana, and a part of Mississippi? 12. Why is the lower course of the Mississippi above the level of the surrounding country? 13. How are the near-by lowlands protected? 14. How are the states of this group drained?

15. Where is the heavy rainfall of the South Central States? The light rainfall? 16. Why is the water often low in the rivers of western Texas?

Fig. 209. Cutting sugar cane, Louisiana

133. Agriculture. — With plenty of moisture, few frosts, and a fine, rich soil, this is a wonderful agricultural region. Of the many crops raised, cotton, sugar, rice, and corn are especially important.

Cotton is the chief crop of the South Central States, as large amounts of it are raised in every state in the group except Kentucky. There the summers are hardly long enough for a full crop to ripen. Texas is the leading cotton state. It holds this position in part because of its great size; it is by far the largest state in the Union. When the cotton is ready to pick, thousands of men and women can be seen at work in the fields. Each one picks from two rows and puts the lint into a long bag fastened to the back.

Fig. 208. Trainload of cotton on its way to Mobile, Alabama

Most of the sugar cane raised in our country is grown in Louisiana. The cane grows to a height of from ten to fifteen feet (Fig. 209). When it is crushed, it yields the sweetish juice from which sugar and molasses are made.

Rice is a plant that looks much like wheat, and produces a head of many little grains as the wheat plant does. It needs a great deal of water, and the best rice is grown on fields that can be flooded at the time of planting and at other times during the growing season. Louisiana, Arkansas, Texas, and California are great rice-growing states. The crop is cultivated chiefly in level lowlands where the fields can be irrigated (Fig. 210). The plowing, harvesting, and threshing are done in much the same way as on the great wheat farms (Sec. 23).

Kentucky raises more tobacco than any other state (Fig. 211). *Louisville*, the chief city of Kentucky, is a great market and manufacturing center for tobacco. *Covington*, connected by several bridges across the Ohio River with the great city of Cincinnati in southern Ohio, also has large tobacco factories.

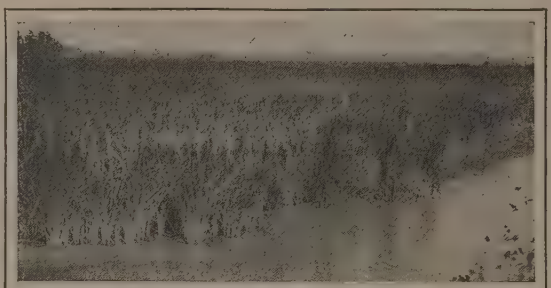


Fig. 210. A rice field in the South

Corn is an important crop in every state of the group. Much wheat is raised in Oklahoma and Texas; Tennessee and Kentucky rank next in its production.

Fig. 211. Piles of tobacco in a warehouse, Kentucky

Fig. 212. Cattle in the grazing region of Texas

134. Grazing.—The western parts of Texas and Oklahoma have a lighter rainfall than elsewhere in this group of states. Fine crops, frequently aided by irrigation or dry farming (Sec. 132), are raised throughout much of this region. The rainfall is sufficient to produce a natural growth of grass. In parts of this grazing section the cattle ranches are fenced. Over the larger pastures or ranges cattle belonging to many owners roam together (Fig. 212). They are watched and cared for by men, called *cowboys*, who thus spend much of their time in the open on horseback.

Every cattle owner has his own mark with which he brands his young cattle each year. This is usually done at the round-up, when the cattle are all driven together. The unbranded calves are caught, and the brand is burned into the skin with a red-hot iron. The chief trade centers for this cattle country are *Fort Worth*, and *San Antonio*, the largest city of Texas.

Each year the cattle that are ready for the market are sent to some large city

to be slaughtered. Among the cities of the South Central States engaged in the industry of slaughtering and meat packing are *Fort Worth*, *Dallas*, and *Houston*, Texas, and *Oklahoma City*, Oklahoma. This industry is also carried on in many cities in the North Central States.

Fig. 215. Lumber yard, Chattanooga, Tennessee

135. Mining, Lumbering, and Manufacturing.—Coal and iron are found in nearly every state in this group. The large beds of coal in eastern Kentucky, in Tennessee, and in northern Alabama belong to the Appalachian coal field (Fig. 179). The coal field in western Kentucky, however, furnishes more than half of the coal mined in that state. There are large iron mines in Tennessee and Alabama.

Fig. 213. Oil wells, Oklahoma

Birmingham, Alabama, is situated where both coal and iron can be easily obtained, and it has become the chief iron and steel center of the South. *Chattanooga* and *Knoxville* in Tennessee are also near the iron and coal fields, and manufacture iron and steel.

There are many petroleum wells in Louisiana, Texas, and Oklahoma, and the output is very large (Fig. 213). Texas and Louisiana produce most of the world's supply of sulphur (Fig. 214).

There are cypress forests in the swampy lowlands, pine forests in the sandy plains and uplands, and hardwood forests in the highlands. Lumbering is a leading industry in the South Central States (Fig. 215). *Memphis*, in Tennessee, is one of the large lumber markets of the country. *Nashville*, the capital of Tennessee, and *Shreveport*, Louisiana, are also important lumber markets.

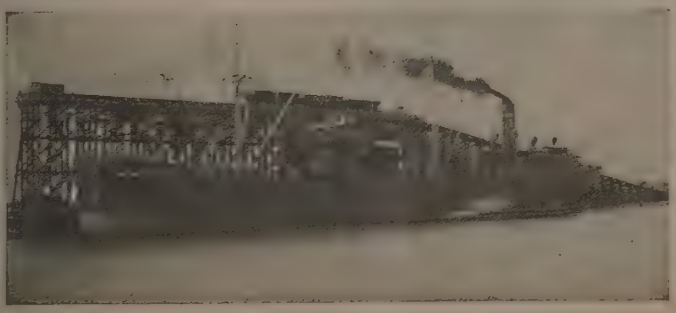


Fig. 214. Loading Freeport Sulphur Company's steamer with sulphur for foreign markets, Freeport, Texas

Cotton seed was at one time thought to have very little value. After the seed had been separated from the lint by the gin, the planter saved enough seed for his new crop and threw

the rest away. The seed is now saved for the oil that it contains; and when the oil has been pressed out, the cake that is left is fed to stock or used in the manufacture of fertilizer. Mills for the manufacture of cottonseed oil are found throughout the cotton-growing regions.

136. Cities and Commerce.—*New Orleans*, Louisiana (Fig. 205), *Galveston* and *Houston*, Texas, and *Mobile*, Alabama, are the principal seaports of the South Central States. All of them export cotton.

New Orleans is about one hundred miles from the mouth of the Mississippi (Fig. 206). The river channel is deep enough for large ocean steamships to reach its wharves. The smaller river boats carry passengers and freight between New Orleans and cities as far away as Pittsburgh, Kansas City, and St. Paul. Trace the routes to these cities on the map (Fig. 150). In Figure 147 notice the railroads leading to New Orleans.

Fig. 216. Sea wall at Galveston

Galveston ships more cotton than any other port in the world, and has also an extensive foreign trade in grain, hides, lumber, and cattle.

The government has deepened and straightened the channel from Houston to the Gulf of Mexico; the city has built wharves, and is now an important port. It has a large trade in cotton and rice. *Beaumont*, *Port Arthur*, and *Orange* have developed similar port facilities, and particularly for the exportation of petroleum and lumber products.

Little Rock, the capital and largest city of Arkansas, is a trade center and manufactures cottonseed oil and lumber.

Meridian, in Mississippi, is a cotton market, and it has cottonseed oil mills.

Review of Sections 133 to 136.—1. What are the four important crops of the South Central States? 2. Which state raises the most cotton? 3. Which state raises little cotton? Why?

4. Where in this section is sugar cane raised? 5. Where is rice grown? On what kind of land is it grown? 6. Where is corn grown? Wheat?

7. For what crop is Kentucky noted? 8. What large city is noted as a market and manufacturing center for this crop?

9. Where are the grazing regions of Texas and Oklahoma? 10. How are the cattle cared for on the unfenced ranges? 11. How does each owner know his own cattle? 12. What is done with the cattle when they are ready for market?

13. Where are the coal beds in this group of states? The iron mines? 14. What city in this group of states leads in the manufacture of iron and steel? 15. Name two other cities that are engaged in this industry.

16. Where is petroleum found? Sulphur? 17. Where are the forests? 18. What cities are engaged in the manufacture of lumber? 19. What products are manufactured from cottonseed?

20. Name four important Gulf ports. 21. How is it possible for ocean steamers to reach New Orleans? 22. Name an important city in Mississippi; in Oklahoma; in Arkansas.

Fig. 217. A cornfield in Ohio. The corn has been cut and gathered in shocks

THE NORTH CENTRAL STATES

137. Map Study.—The group of twelve North Central States is more than eleven times as large as New England.

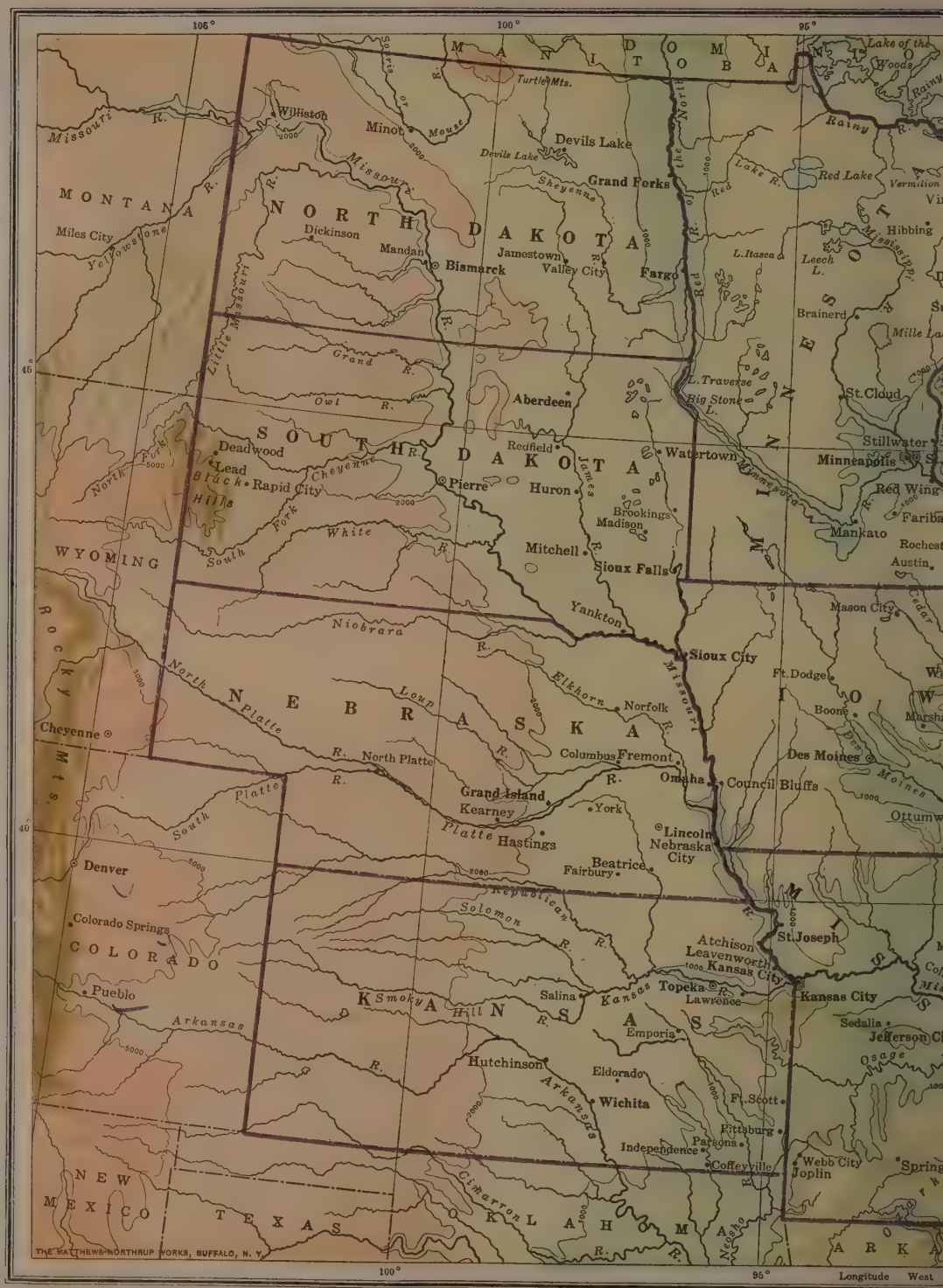
Five states are east of the Mississippi. They are *Ohio*, *Indiana*, *Illinois*, *Michigan*, and *Wisconsin*. Six states — *Iowa*, *Missouri*, *Kansas*, *Nebraska*, *South Dakota*, and *North Dakota* — are west of the Mississippi. *Minnesota* is the only state in the group lying on both sides of the river. On the map (Fig. 218) show where the Mississippi has its source.

Which states are bordered by one or more of the Great Lakes? Which states are bordered by the Ohio River? By the Mississippi River? Which are bordered or crossed by the Missouri River?

138. Surface and Drainage.—Most of this part of our country is a region of plains which are almost level or gently rolling. In the far west, where they meet the foothills of the Rocky Mountains, they reach a much greater elevation than in the eastern part of the group.

There are, however, some highland areas in northern Michigan, Wisconsin, and Minnesota. The southeastern part of Ohio is hilly where the Appalachian Plateau reaches into that state. There are some rugged mountains, known as the Black Hills, in the western part of South Dakota; and a highland, known as the Ozark Plateau, in southern Missouri (Fig. 218).

On the plains the soil is usually fine, deep, and fertile. It is especially fine in the river flood plains, and in regions where the soil was formed by the breaking up of the rocks beneath (Sec. 14).


105°
100°
95°
MANITOBA
ONTARIO
Lake of the Woods
Rainy R.
Turtle Mts.
Souris R.
Missouri R.
Williston
Minot
Mouse R.
Devils Lake
Grand Forks
Red R.
Lake Red
Red Lake
Vermilion
MONTANA
NORTH DAKOTA
Miles City
Yellowstone R.
Dickinson
Mandan
Bismarck
Jamestown
Valley City
Fargo
Hibbing
Mississippi R.
Leech L.
L. Itasca
Brainerd
Mille Lacs
MINNESOTA
Little Missouri R.
Grand R.
Owl R.
Aberdeen
L. Traverse
Big Stone L.
St. Cloud
Stillwater
Minneapolis
Red Wing
Faribault
Mankato
Rochester
Austin
Deadwood
Lead
Black Hills
North Fork
Cheyenne R.
Rapid City
Redfield
Watertown
Pierre
Huron
James R.
Brookings
Madison
Mitchell
Sioux Falls
SOUTH DAKOTA
WYOMING
White R.
South Fork
Yankton
Niobrara R.
Mason City
Cedar R.
Sioux City
Ft. Dodge
Rocky Mts.
North Platte R.
Loup R.
Elkhorn R.
Norfolk
Missouri R.
IOWA
Boone
Cheyenne
NEBRASKA
Columbus
Fremont
North Platte
Omaha
Council Bluffs
Des Moines
Grand Island
Kearney
York
Platte R.
South Platte R.
Lincoln
Nebraska City
Hastings
Beatrice
Fairbury
Denver
Republican R.
Solomon R.
Atchison
Leavenworth
St. Joseph
Kansas City
Colorado Springs
COLORADO
Pueblo
Arkansas R.
Smoky Hill R.
Kansas
Topeka
Lawrence
Salina
Emporia
Sedalia
Hutchinson
Eldorado
Wichita
Ft. Scott
Pittsburg
Parsons
Independence
Coffeyville
Webb City
Joplin
NEW MEXICO
TEXAS
Cimarron R.
OKLAHOMA
Neosho R.
ARKANSAS
40°
45°
THE MATTHEWS-NORTHRUP WORKS, BUFFALO, N. Y.
Longitude West

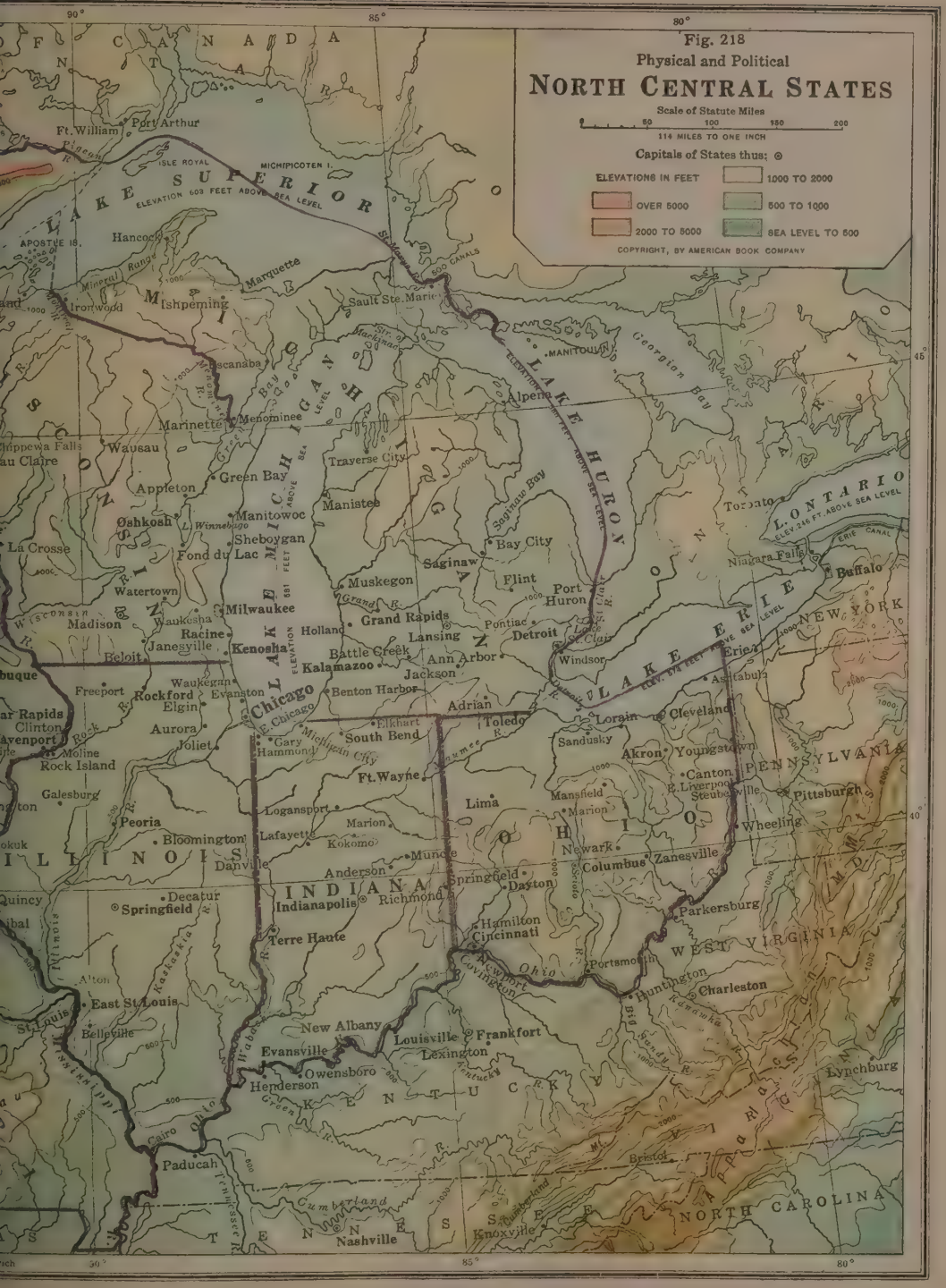


Fig. 218
Physical and Political
NORTH CENTRAL STATES
Scale of Statute Miles
0 50 100 150 200
114 MILES TO ONE INCH
Capitals of States thus: ⊙
ELEVATIONS IN FEET
OVER 5000
2000 TO 5000
1000 TO 2000
500 TO 1000
SEA LEVEL TO 500
COPYRIGHT, BY AMERICAN BOOK COMPANY
CANADA
LAKE SUPERIOR
ELEVATION 603 FEET ABOVE SEA LEVEL
ISLE ROYAL
MICHIPICOTEN I.
Port Arthur
Ft. William
APOSTLE IS.
Hancock
Marquette
Mineral Range
Ironwood
Ishpeming
Sault Ste. Marie
Str. of Mackinac
MANITOULIN
Georgian Bay
LAKE HURON
ELEVATION 581 FEET ABOVE SEA LEVEL
Escanaba
Menominee
Marinette
Wausau
Green Bay
Appleton
Oshkosh
Manitowoc
Sheboygan
Fond du Lac
Traverse City
Manistee
Saginaw Bay
Alpena
Bay City
Saginaw
Muskegon
Grand R.
Grand Rapids
Lansing
Flint
Port Huron
Pontiac
Detroit
St. Clair R.
Windsor
Toronto
ONTARIO
ELEV. 246 FT. ABOVE SEA LEVEL
ERIE CANAL
Niagara Falls
Buffalo
LAKE ERIE
ELEV. 571 FEET ABOVE SEA LEVEL
NEW YORK
Erie
Ashtabula
Cleveland
Lorain
Sandusky
Akron
Youngstown
Canton
E. Liverpool
Steubenville
Pittsburgh
PENNSYLVANIA
Wheeling
Mansfield
Marion
Newark
Columbus
Zanesville
OHIO
Springfield
Dayton
Hamilton
Cincinnati
Parkersburg
WEST VIRGINIA
Portsmouth
Huntington
Charleston
Ohio R.
Kanawha R.
Big Sandy R.
Newport
Covington
Lexington
Frankfort
Louisville
New Albany
Evansville
Owensboro
Henderson
Green R.
Kentucky R.
KENTUCKY
Lynchburg
Blue Ridge Mts.
Bristol
Cumberland Mts.
Cumberland R.
Knoxville
Nashville
TENNESSEE
NORTH CAROLINA
Cairo
Paducah
Tennessee R.
Mississippi R.
Kaskaskia R.
Shawneetown
Alton
East St. Louis
St. Louis
Belleville
Springfield
Decatur
Quincy
Peoria
Bloomington
Galesburg
Rock Island
Moline
Davenport
Clinton
Rock R.
Illinois R.
ILLINOIS
Terre Haute
Indianapolis
Richmond
Anderson
Muncie
Danville
Lafayette
Logansport
Kokomo
Marion
Ft. Wayne
Elkhart
South Bend
Gary
Hammond
Michigan City
Lake Michigan
Chicago
E. Chicago
Waukegan
Evanston
Elgin
Aurora
Joliet
Rockford
Freeport
Dubuque
Madison
Waukesha
Racine
Janesville
Beloit
Kenosha
Milwaukee
Watertown
La Crosse
Chippewa Falls
Eau Claire
WISCONSIN
Kalamazoo
Battle Creek
Ann Arbor
Jackson
Benton Harbor
Holland
Adrian
Toledo
Maumee R.
Michigan
INDIANA
Wabash R.
Whitewater R.
Miami R.
Scioto R.
Muskingum R.
Hocking R.
Little Miami R.
Great Miami R.
Auglaize R.
Maumee R.
Sandusky R.
Huron R.
Black R.
Cuyahoga R.
Grand R.
Kalamazoo R.
Fox R.
Wisconsin R.
Rock R.
Illinois R.
Mississippi R.
Missouri R.
Ohio R.
Tennessee R.
Cumberland R.
Green R.
Kentucky R.
Big Sandy R.
Kanawha R.
Ohio R.
Monongahela R.
Allegheny R.
Susquehanna R.
Delaware R.
Hudson R.
Lake Erie
Lake Michigan
Lake Huron
Lake Superior
Lake St. Clair
Lake Ontario
Lake Michigan
Lake Erie
Lake Huron
Lake Superior
Lake Ontario
Lake St. Clair

Fig. 219. Glacial ridges in Wisconsin

In regions once covered by the great glacier that spread over the northern part of our country many thousands of years ago, the soil was mixed with broken and ground-up rock. In some places, when the ice finally melted, heaps and ridges of earth and broken stone were left (Fig. 219). During the thousands of years that passed after the glacier melted and before settlers came, the decaying leaves and grass added to the fertility of the soil.

Nearly all this region belongs to the basin of the Mississippi, and most of the large streams flow directly into that river or into one of its great tributaries, the Ohio and the Missouri. There is a small area that drains northward to Hudson Bay, and another area that drains to the Great Lakes (Fig. 135).

The Mississippi with its tributaries furnishes a convenient water route to the Gulf of Mexico and the Atlantic Ocean. The Great Lakes are connected with the north Atlantic, both through the St. Lawrence River and through the Erie Barge Canal and the Hudson River.

Goods that are to go by canal and the Hudson to New York are transferred from ships to canal barges at Buffalo. If they are to go to Europe, they must be once more shifted into large ships at New York.

139. Climate and Agriculture.—In every region as large as this, there are differences in the temperature and rainfall of its various parts. Throughout this whole region the summers are hot and the winters are cold; but the winters are colder and last longer in the northern part than in the southern. The rainfall is greater in the southern part than in the northern, and much greater in the eastern part than in the western (Fig. 145).

Several causes unite to make this one of the greatest agricultural regions in the world: (1) The fields are nearly level, and most of the soil is fine and easily cultivated. (2) The soil is deep and rich. (3) The summers are long enough and warm enough for the growth of crops. (4) Except in the far western part there is rainfall enough and at the right time in the year for the growth of crops. (5) There is a market for all the food products that can possibly be raised. (6) Two great water routes reach into the very heart of this region, so that the products can be shipped easily and cheaply to the people who need them.

Corn is the most valuable single crop raised in the United States. For its most successful growth it needs heavy rains from time to time during the growing season, and warm sunny days between. Some corn is grown in every group of states. The great corn states of the

Fig. 220. Corn-growing regions of the United States

Fig. 221. Wheat-growing regions of the United States

country, however, are Iowa, Illinois, Nebraska, Indiana, Missouri, Ohio, and Kansas, all in the North Central group (Figs. 217, 220). These seven states alone raise more than half of all the corn grown in the United States.

Wheat is grown in many parts of our country, but chiefly where there is a good soil and where it is not too warm. Among the great wheat states are Kansas, North Dakota, Nebraska, Illinois, Missouri, Ohio, and South Dakota. Wheat is grown in all the other North Central states also. This group of states produces two thirds of all the wheat grown in the United States. In the wheat regions, much of the planting and harvesting is done by machinery (Sec. 23). *Minneapolis* in Minnesota is the greatest flour-manufacturing center. Much wheat and flour are sent to eastern markets through *Chicago*, Illinois, *Duluth*, Minnesota, *Superior*, Wisconsin, and *Toledo*, Ohio.

Among the other crops of importance are hay and oats, needed for the cattle and horses; and vegetables and fruits, grown chiefly for home use and for city markets. Beets used in the manufacture of sugar are grown in Michigan, especially in the region around the city of *Saginaw*. They are also grown in some of the other states of the group. Tobacco is grown in Ohio. In the two Dakotas and in Minnesota a large amount of flax is grown for the seed, which is used in making linseed oil.

Review of Sections 137 to 139.—1. How many states are in the North Central group? 2. Name those that are east of the Mississippi. Those that are west. 3. Which states border on the Great Lakes? On the Ohio River?

4. Describe the surface of this region. 5. Where are the highlands? 6. What kind of soil is found on the plains?

7. To what great river basin does most of this region belong? 8. What part drains into the Great Lakes? Into Hudson Bay? 9. What great water routes connect this region with the Atlantic? 10. On the route to New York, where are goods changed from one boat to another?

11. Where is the rainfall heavy? Light? 12. Where are the coldest winters?

13. What are the causes that help to make this a great agricultural region? 14. What does corn need for the best growth? 15. Which states grow much corn? Much wheat? 16. Name some other crops of importance. 17. Name a great flour-manufacturing city.

140. Cattle Raising and Meat Packing.—Many farmers in the North Central States keep dairy cows. There are cities to be supplied with milk, and this region produces also much butter and cheese.

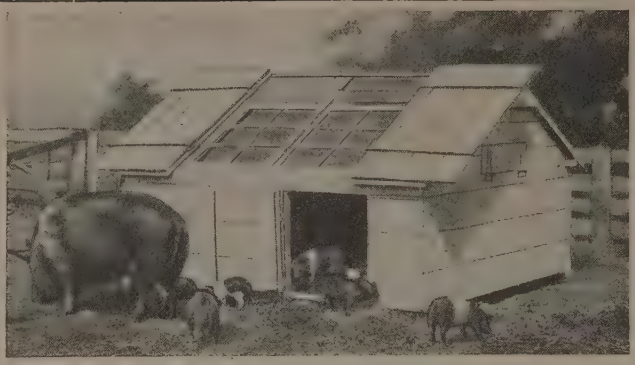


Fig. 222. A family of pigs, Iowa

In the far western part of this group there are extensive grazing regions, with great herds of cattle and sheep. Many of the pastures are fenced. There is not much snow in the grazing region, and sometimes the cattle are left out of doors during the winter to feed upon the grass, which dries like hay without being cut. In most cases, however, it has been found more profitable to provide shelter for the stock and to feed them regularly.

The farmers find that it often pays better to feed their corn to stock than to sell it. For this reason many hogs and cattle are fattened on the farms. They are then sent either to some neighboring city to be slaughtered for meat, or are shipped alive (on the hoof) to eastern markets. Much of the fresh meat prepared in the packing houses of *Chicago*, *Omaha*, *Kansas City*, and *St. Louis* is sent to eastern markets in refrigerator cars.

The meat packers have found some use for every part of the slaughtered animal. The hides are made into leather, and even the bones and bristles are valuable.

141. Forests and the Manufactures of Wood.—In Ohio and Indiana most of the land was once covered with trees. There, as in the East, the early settlers found it necessary to clear away the forests before they could cultivate the land. The trees were in the way and many were burned.

Beyond Indiana the settlers found a country of broad grassy plains, or *prairies*, with few forests except along the streams and on the uplands. At first they did not think that the prairie soil was fit for cultivation, and they settled in the timbered lands along the streams. Then they learned that the prairie land was very fertile, and the remaining forests were for a time undisturbed. In recent years there has been a great demand for lumber. Much of the timber has been cut away, and the small forests that are left in the North Central States have become very valuable. Lumbering is still an important industry. In many of the cities of this group there are large lumber mills and factories manufacturing articles of wood. *Grand Rapids*, Michigan, and *Rockford*, Illinois, are especially noted for their manufacture of furniture.

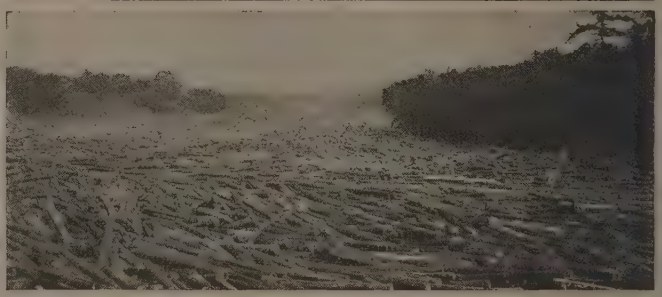


Fig. 223. Log jam in a Wisconsin river

142. Mines and Manufactures of Metal.—The iron mines in the Lake Superior district of Michigan, Wisconsin, and Minnesota are the largest and most productive in our country. A part of the ore is dug from deep mines; but much is scooped up from the surface of the earth with big steam shovels. The ore from this region is sent east from *Duluth* and *Superior* and from several other cities on the shore of Lake Superior. At these ports the ore is loaded on boats (Fig. 224) and sent to *Cleveland*, Ohio, or some other city on or near the lakes (Fig. 225), to be smelted. Much of the iron ore unloaded at Lake Erie ports is sent inland by rail to *Youngstown* or to *Pittsburgh* (Sec. 119).

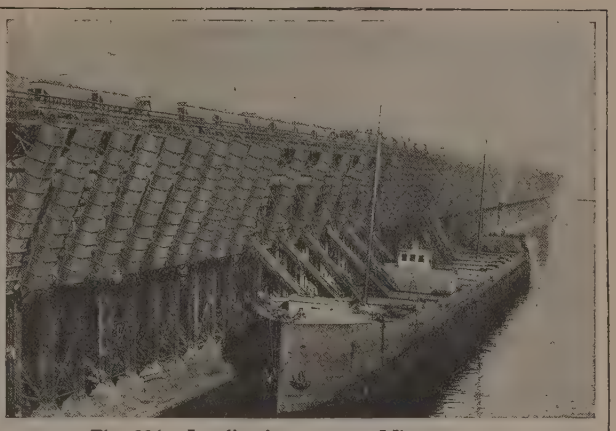


Fig. 224. Loading iron ore at a Minnesota port

Fig. 225. Unloading ore by machinery at Cleveland

After the ore has been smelted (Fig. 226), the iron is used in the manufacture of a great many articles. Among them are locomotives, steel rails, steel cars, iron ships, automobiles, and the iron and steel parts of farming tools and machinery of all sorts. The wooden parts of the agricultural implements may be made in the same factories as the iron and steel parts, or they may be made in other factories that make things of wood only (Sec. 141).

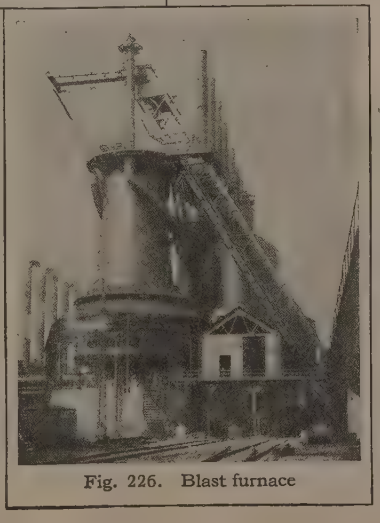


Fig. 226. Blast furnace

Northern Michigan is one of the great copper-producing sections of the world. This metal is used in hundreds of ways, but especially for all kinds of electrical machinery, and for telegraph, telephone, and trolley wires.

Coal is found in many of these states, but the chief coal beds are in the southern part of the group (Fig. 179). *Evansville*, Indiana, *Springfield*, Illinois, and *Des Moines*, Iowa, are three of the cities that are situated in coal-mining regions. Illinois, Kansas, Ohio, and Indiana have many petroleum wells and wells yielding natural gas. Coal, petroleum, and gas are used as fuel, and the gas is also used for lighting.

Gold is mined in the Black Hills of South Dakota, lead in Missouri, and zinc in Missouri and Wisconsin. Michigan produces more salt than any other state in the Union. Limestone and clay, used in making cement, and finer clays, suitable for making pottery and tiles, are found in many places. Ohio is the leading state in the Union in the production of pottery.

Fig. 227. Flour mills at Minneapolis

Review of Sections 140 to 142.—1. What products come from dairying regions? 2. Where are the grazing regions of the North Central group? 3. How are hogs and cattle fattened? 4. What is then done with them?

5. Where did the early settlers of the North Central region find forests? 6. Why did they cut down some of them? Why not all? 7. What is now being done with the forests of this region? 8. What is made at Grand Rapids?

9. In which states are the great iron mines? How is the iron mined? 10. Where is the ore taken to be smelted? 11. Name some large articles made from iron and steel.

12. Where are the copper mines? For what is copper used?

13. Where are the important coal fields?

14. What other fuels are found in these states?

15. Where is gold mined? Lead? Zinc?

16. What uses are made of clays? Limestone?

143. Manufacturing. — You have already studied some of the kinds of manufacturing that are carried on in the North Central region. There is an abundance of raw material in the products of the fields, the forests, and the mines. Power is furnished by waterfalls and by coal, crude petroleum, and natural gas. There is a large population to do the work in the mills and factories and to use the manufactured articles; and there are good water routes and plenty of railroads for sending the finished goods to distant markets.

The wheat, corn, and other grains furnish the raw material for use in the flour mills (Fig. 227) and breakfast food factories. The raising of orchard fruits, vegetables, and berries has led to the growth of an extensive canning industry (Fig. 228).

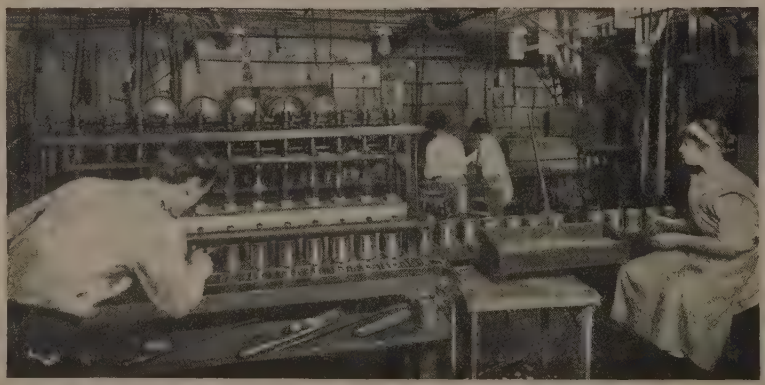


Fig. 228. Filling and capping cans in a canning factory, Indiana

Some of the wool from the sheep ranches is made into cloth, and the hides of the cattle and sheep are made into shoes and other kinds of leather goods. The dairying, meat-packing, and iron-working industries have already been studied (Secs. 140, 142).

In this great farming section many agricultural tools and machines are needed, and the wood and iron necessary for their manufacture are close at hand. The articles made include plows, harrows, reaping machines, threshing machines, tractors, and wagons. Among the cities where this industry is carried on are *Columbus* and *Dayton* in Ohio; *Evansville*, *Indianapolis*, *Fort Wayne*, and *South Bend* in Indiana; and *Chicago*, *Peoria*, and *Springfield* in Illinois (Fig. 229).

The forests also furnish lumber for all kinds of building, and for the manufacture of pulp and paper.

One of the newer industries in this group of states is the manufacture of automobiles. This industry has reached

Fig. 229. Casting mower wheels, harvester works, Chicago

Fig. 230. Breaking-in automobile engines by means of electric motors, Detroit

first importance in Michigan. *Detroit* has grown to be the leading automobile-manufacturing center in the world (Fig. 230). *Flint* and *Lansing* in Michigan, *Indianapolis* and *South Bend* in Indiana, *Cleveland* and *Toledo* in Ohio, and many other cities, are engaged in this industry. *Akron*, Ohio, is an important center for the manufacture of automobile tires.

144. Routes of Trade and the Cities.— In addition to the natural trade routes offered by the Mississippi and its tributaries, and the Great Lakes with their eastern connections, there are many railroads. The map (Fig. 147) shows that the railroads are as close together here as in any part of the country.

Chicago, the second city in size in the United States, is located near the southern end of Lake Michigan. Through the Great Lakes it is connected not only with the city of New York but, by way of the St. Lawrence, with all the seaports of the world. A small river that enters the lake at Chicago has been deepened for a harbor and connected by a canal with the Illinois River, and so with the Mississippi and the Gulf of Mexico.

Railway lines from all parts of the country enter Chicago. Its location has made it the chief city in the central part of the country. Cattle, sheep, and hogs are sent to its stockyards in vast numbers, and it has become the chief meat-packing center of the world. Its manufactures include agricultural tools, clothing, and cars, and its elevators handle an enormous amount of grain on its way to the flour mills or to eastern markets.

Ewing Galloway

Fig. 231. Michigan Avenue, Chicago

Farther north, on the western side of the lake, is *Milwaukee*, the chief city of Wisconsin. Here are extensive manufactures of leather and flour, and also packing houses and breweries. Other lake ports include *Duluth* and *Superior* (Secs. 139, 142), *Detroit* (Sec. 143), *Toledo* (Secs. 139, 143), and *Cleveland* (Sec. 142). As Cleveland is easily supplied with both coal and iron, it has become an important city for the manufacture of iron and steel.

On the Ohio River, the great eastern tributary of the Mississippi, the chief city of the North Central group is *Cincinnati*. It is a center for the manufacture of clothing, shoes, tobacco, iron, and steel.

Some distance north of the junction of the Mississippi and Ohio rivers, on the west bank of the Mississippi, is *St. Louis*. Only a few miles north of St. Louis the Mississippi is joined by its great western tributary, the Missouri. St. Louis is therefore in a position to carry on trade with the cities and towns along the banks of both rivers.

Added importance has been given to its location by the building of great bridges across the Mississippi (Fig. 232). Over them the railroads from eastern points cross, and connect with those from the west, northwest, and southwest.

St. Louis has naturally become a grain and meat-packing center. It also has large manufacturing industries, including the manufacture of shoes, tobacco, street cars, and railroad cars. *East St. Louis*, across the river in Illinois, is a great railroad center, and has large stockyards and meat-packing establishments.

Fig. 232. Steamboat and bridge at St. Louis

Fig. 233. Stockyards at Omaha, Nebraska

At *Keokuk*, Iowa, a long dam has been built across the Mississippi River. The falling water is used to develop electrical energy which is carried by wires to St. Louis and other cities to furnish light and power.

On the Mississippi farther north are the "Twin Cities" of Minnesota, *Minneapolis* (Sec. 139) and *St. Paul*. They are the chief trading centers for a large surrounding country. The Falls of St. Anthony, in the river at this point (Fig. 234), furnish an abundance of power for manufacturing uses. St. Paul is the capital of Minnesota and has long been a center of trade with the Northwest.

On the Missouri River there are several important cities. They include the two cities, each called *Kansas City*, one in Missouri and the other in Kansas; *St. Joseph*, Missouri, *Omaha*, Nebraska, and *Sioux City*, Iowa. All these cities are in or near the regions where cattle are raised and fattened, and are engaged largely in meat packing (Fig. 233), and in trade with the surrounding agricultural region. *Sioux Falls*, South Dakota, and *Fargo*, North Dakota, are in the wheat-growing region and have large flour mills.

Fig. 234. Falls of St. Anthony, Minneapolis

Review of Sections 143 and 144.—1. What conditions help to make the North Central States a manufacturing region? 2. What are the manufactures from the products of the fields?

3. Why is the manufacture of agricultural tools and machines in this region so important? Name three cities where they are made. 4. Where are automobiles made?

5. What routes of trade other than waterways has this region?

6. How has the location of Chicago helped its growth? 7. Name some of its important industries.

8. What are some of the manufactures of Milwaukee? 9. Name some other ports on the Great Lakes. 10. In what manufacturing industry does Detroit take first rank? 11. Why did Cleveland take up the manufacture of iron and steel goods?

12. Locate Cincinnati. 13. What are some of its industries? 14. Where is St. Louis? 15. What are some of the advantages of its position? 16. Name two of its important industries.

17. Where are St. Paul and Minneapolis? 18. For what industry is Minneapolis noted? What advantages does the city have for that industry?

19. Name four meat-packing centers on the Missouri River. In what state is each?

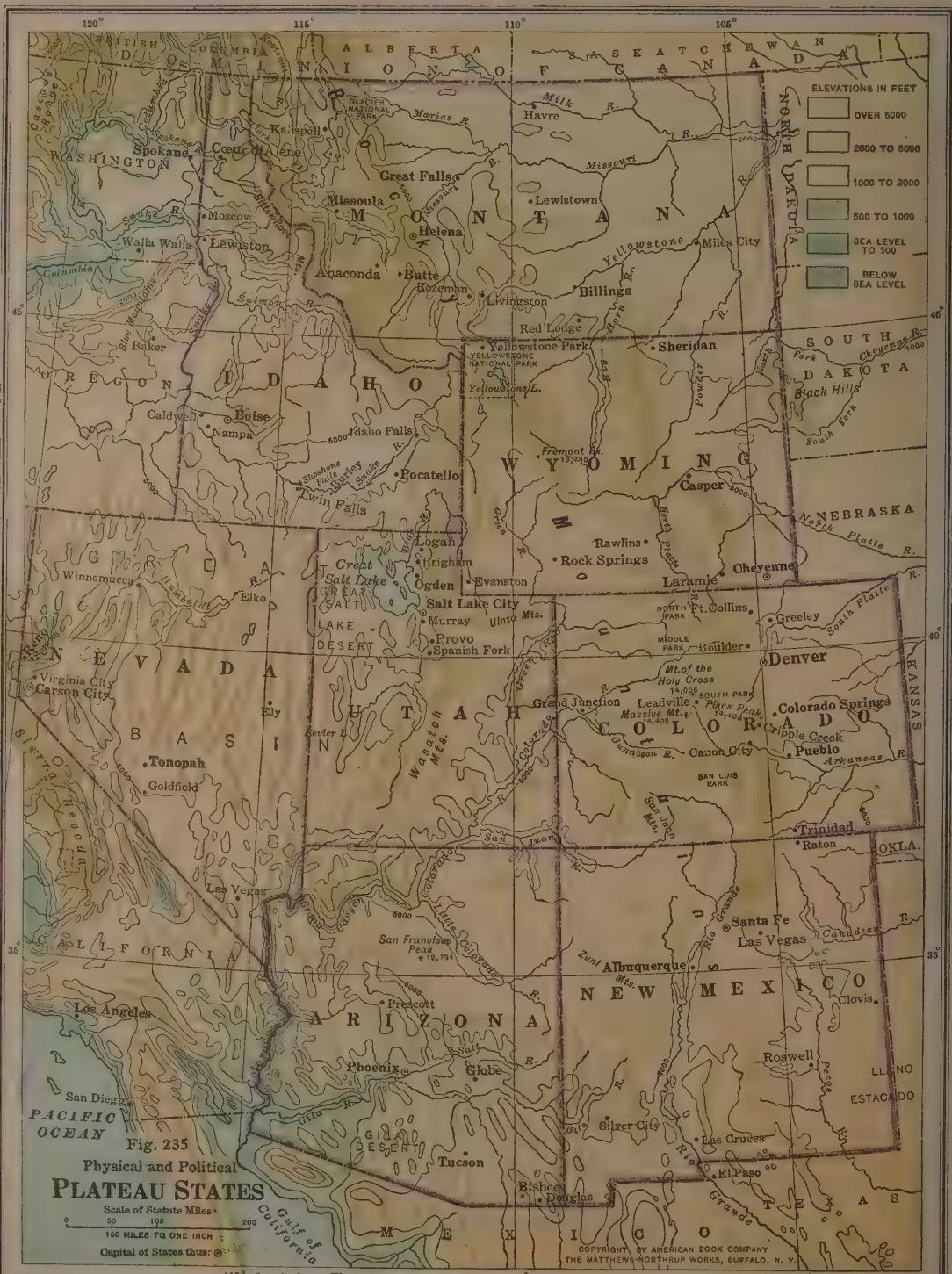

ELEVATIONS IN FEET
OVER 5000
2000 TO 5000
1000 TO 2000
500 TO 1000
SEA LEVEL TO 500
BELOW SEA LEVEL
Fig. 235
Physical and Political
PLATEAU STATES
Scale of Statute Miles
165 MILES TO ONE INCH
Capital of States thus:
COPYRIGHT, BY AMERICAN BOOK COMPANY
THE MATTHEWS-NORTHRUP WORKS, BUFFALO, N. Y.
115° Longitude West from Greenwich 110°
WASHINGTON
OREGON
IDAHO
MONTANA
WYOMING
NEVADA
UTAH
COLORADO
ARIZONA
NEW MEXICO
Spokane
Coeur d'Alene
Kalispell
Great Falls
Missoula
Lewistown
Helena
Havre
Miles City
Billings
Anaconda
Butte
Bozeman
Livingston
Red Lodge
Moscow
Walla Walla
Lewiston
Baker
Boise
Caldwell
Nampa
Idaho Falls
Pocatello
Twin Falls
Yellowstone Park
Sheridan
Casper
Rawlins
Rock Springs
Cheyenne
Laramie
Logan
Brigham
Ogden
Evanston
Salt Lake City
Murray
Provo
Spanish Fork
Great Salt Lake
Winnemucca
Elko
Virginia City
Carson City
Ely
Tonopah
Goldfield
Las Vegas
Fort Collins
Greeley
Boulder
Denver
Colorado Springs
Cripple Creek
Canon City
Pueblo
Leadville
Grand Junction
Trinidad
Raton
Santa Fe
Las Vegas
Albuquerque
Clovis
Roswell
Prescott
Phoenix
Globe
Silver City
Las Cruces
El Paso
Tucson
Bisbee
Douglas
Los Angeles
San Diego
PACIFIC OCEAN
Gulf of California
MEXICO
TEXAS
OKLA.
NEBRASKA
SOUTH DAKOTA
NORTH DAKOTA
KANSAS
ALBERTA
SASKATCHEWAN
BRITISH COLUMBIA
Yellowstone R.
Missouri R.
Snake R.
Columbia R.
Colorado R.
Rio Grande
Pecos R.
Canadian R.
Arkansas R.
Platte R.
Green R.
Gila R.
Salt R.
Wasatch Mts.
Uinta Mts.
Sierra Nevada
Mt. of the Holy Cross
Massive Mt.
Pikes Peak
Gila Desert
Llano Estacado

Fig. 236. Railroad crossing a range of the Rocky Mountains in Colorado

THE PLATEAU STATES

145. Position. — The states of the Plateau group (Fig. 235) stretch in a broad belt from the northern to the southern boundary of the United States. Four of them — *Montana*, *Wyoming*, *Colorado*, and *New Mexico* — lie partly in the basin of the Mississippi River. The other four — *Idaho*, *Nevada*, *Utah*, and *Arizona* — lie entirely in the Cordilleran region.

How do these states compare in size with the state in which you live?

146. Surface and Drainage. — The plains of the Mississippi Valley gradually increase in height toward the west until they reach the foot of the Rocky Mountains. The eastern border of the Plateau States is included in the Great Plains. West of these plains, and extending across the Plateau States in a northwest and southeast direction, are the Rocky Mountains, forming the eastern part of the Cordilleras. They are not one single range, but are made up of several ranges. There are many passes, or low places, in these mountain ranges. Through some of them, railroads have been built, to join the eastern and western parts of the country (Fig. 236).

West of the Rocky Mountains there are high plateaus in Idaho, Colorado, Utah, Nevada, Arizona, and New Mexico. The plateaus in many places are higher than any of the Appalachian ranges, and the ranges and peaks rise several thousand feet above the plateaus.

A part of the drainage of the Plateau States reaches the Gulf of Mexico through the Mississippi River and through the Rio Grande. Another part reaches the Pacific Ocean through the Columbia River in the north, and through the Colorado River and the Gulf of California in the south. Find these rivers on the map (Fig. 150).

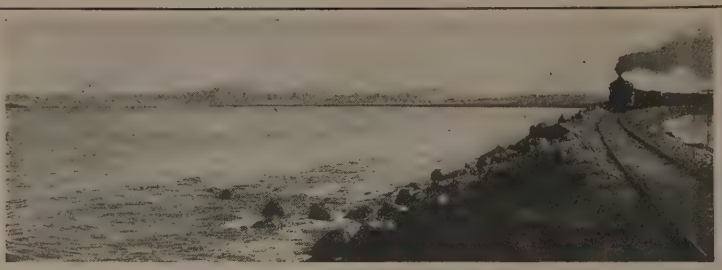


Fig. 237. Great Salt Lake

In Nevada and Utah is a region called the *Great Basin*. Its drainage has no outlet to the sea. The rainfall is light. The evaporation from the water surfaces is very rapid, and some of the streams gradually dry up or end in swampy places called *sinks*. Other streams flow into lakes that have no outlet. In these lakes the water that evaporates from year to year about balances the amount brought in by the streams.

Such lakes are salt. The water that flows into the lake has a little salt dissolved in it, and as it evaporates the salt is left behind. Therefore the water of the lake gradually becomes very salt. The largest lake of the Great Basin is the Great Salt Lake (Fig. 237).

It is interesting to watch people bathing in this lake. The water is so heavy with salt that they cannot sink. Even those who do not swim are in no danger.

147. Climate.—Most of the Plateau region is so high that even in midsummer there is snow on the higher peaks and mountain slopes as far south as Colorado. Farther north, the winters are extremely cold, and where there is sufficient moisture the whole country is snow-covered for several months each year. In the southern part it is much warmer even in the winter, and in the lowlands of Arizona snow is unknown.

The rainfall over most of the region is light (Fig. 145). The winds from the Pacific Ocean (Fig. 139) are the ones we should expect to bring rain, but they have left most of their moisture on the western slopes of the mountains farther west. This is because the wind from the ocean is forced to great heights in crossing the mountains. As it goes higher it becomes colder and the moisture in the air condenses and falls as rain or snow. After the wind has crossed such a highland and begins to descend to lower levels it becomes warmer. Such winds are usually dry and bring but little rain. This is the reason why there is so little rainfall in the Great Basin, on the eastern mountain slopes, and on the plains east of the Cordilleras.

On the higher western slopes and in the high valleys there is usually enough rainfall during the year for the growth of forests. Many of the highest peaks are so cold that trees will not grow on them. Some of the forest regions have been set aside by our government as forest reserves (Fig. 238).

Fig. 238. National forests in the United States

Southwestern Arizona is part of a true desert that reaches into southern California. It is the driest and hottest part of the United States.

Desert Laboratory of the Carnegie Institution

Fig. 239. In the desert region of New Mexico

148. Agriculture.—For a time it was supposed that the rainfall in the Plateau region was too light for agriculture. Now, however, good crops are raised in these regions of light rainfall by the *dry farming* method of cultivation (Sec. 132). In some parts of the Plateau States there is enough rain for many crops.

Smaller areas also have been made to produce large crops by means of *irrigation*. There are valleys in which big dams have been built to hold back the rivers fed by the rain and melting snow. The water from these reservoirs is carried in ditches to the fields and used to water growing crops. Water from wells is also used for irrigation. From some wells the water is pumped by windmills or engines (Fig. 240) and in other wells it rises to the surface without being pumped. There are many such irrigated districts, but taken together they form only a small part of the whole area.

In both the dry farming and the irrigated regions more and more farms are being developed. Among the most valuable crops are wheat, oats, barley, alfalfa, sugar beets, and potatoes and other vegetables. Fruit raising is also a very profitable industry in the irrigated regions. Many beet sugar factories have been built in Colorado and other states, and sugar making has come to be one of the great manufacturing industries of this region.

149. Grazing.—There are large areas of grassland in the Plateau region where grazing is more profitable than agriculture. The grasslands of the forest reserves (Fig. 238) are used for pasture by permission of the government. Great flocks of sheep and herds of cattle are raised.

Idaho and Montana lead all other states in sheep raising, and the industry is important in all the Plateau States. Here, as in the Dakotas, grass left uncut cures as it stands (Sec. 140), and furnishes excellent winter pasture except where the snow is deep. The wool and the sheep and lambs find a ready market farther east.

Fig. 240. Pumping water for irrigation, New Mexico

Fig. 241. Copper mine, Arizona

Review of Sections 145 to 149.—1. Name the states of the Plateau group. 2. What mountains cross this region? 3. Of what mountain group are they a part? 4. Where are the high plateaus?

5. How does drainage from these states reach the Gulf of Mexico? The Pacific Ocean? 6. Where is the Great Basin? 7. What becomes of its drainage? 8. Why are the lakes of the Great Basin salt?

9. Where in this region does the snow stay on the ground even in midsummer? 10. Where is snow unknown? 11. Where are the forests? Why? 12. Where is there a true desert?

13. What two kinds of farming are carried on? 14. What are some of the crops raised? 15. Name an important manufacture of Colorado. 16. What kinds of animals are raised in the grazing regions of the Plateau States?

150. Mining.—The industry for which the Plateau States are best known is mining. There are mines of gold, silver, copper, lead, and zinc, as well as coal and iron. Gold and silver are called *precious metals*. It was in 1848 that gold was first found in California. At that time there were very few settlers in the whole western country. As soon as it was known that gold had been discovered, many men started for the gold fields. Later, men searching for gold traveled through the mountains and located valuable mines of all the metals.

In this group of states Colorado, Arizona, and Nevada are the chief gold producers. The leading states in the mining of silver are Utah and Montana. There are large silver mines also in Nevada, Idaho, and Colorado.

Arizona, Montana, and Utah are the chief copper-producing states. The production of copper is also very large in New Mexico and Nevada. The copper-mining center of Montana is *Butte*.

Lead is found in Idaho, Utah, and Colorado. *Leadville* in Colorado is famous more for its silver than for its lead.

Montana and Colorado produce zinc ore.

The leading Plateau States in the mining of coal are Colorado and Wyoming, and the quantity of coal produced is increasing as the industries that need fuel continue to grow.

The chief manufacturing industries of the Plateau States are closely connected with mining. There are stamp mills where the ore is crushed, and smelters where it is melted to remove impurities. There are smelters at *Denver* and *Pueblo* in Colorado, near *Salt Lake City* in Utah, at *Reno* in Nevada, and at many other cities. At *Pueblo* there are iron and steel works.

151. Transportation.—There are not so many railroads in this group of states as in the states farther east (Fig. 147). Several lines have been built across the Plateau region to connect the eastern and western parts of the country. These *transcontinental* (across the continent) lines are great trunk railroads, and have many branches built to reach the mines and the agricultural districts.

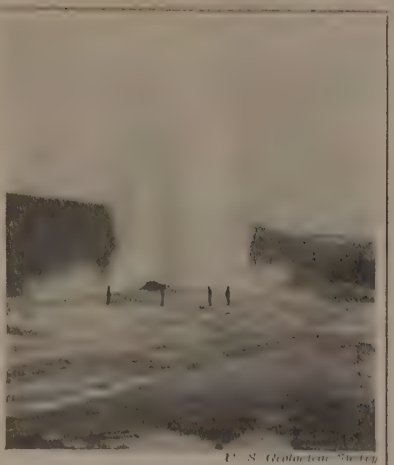


Fig. 242. A geyser in eruption, Yellowstone National Park

152. Scenery.—For any one who loves the mountains or cares for the works of nature on a grand scale, this part of our country has unusual attractions. In northwestern Wyoming the government has set aside the wonderland known as the *Yellowstone National Park*. Here the Yellowstone River has cut a deep, narrow gorge, or canyon. The falls of the Yellowstone are very high, and the walls of the gorge show beautiful colors.

The hot springs and the geysers, however, are the great things to see in the Park. In hundreds of places there are springs where hot water bubbles up from the ground. The hot water contains mineral matter that it has dissolved out of the rocks. As it flows over the ground, it cools, and some of the material is deposited in a coating of varied and brilliant colors.

The geysers hurl columns of hot water and steam high into the air (Fig. 242). Some spout at regular intervals, and some spout irregularly. With some the spouting is every few minutes, but with others the period of rest is much longer.

In the *Glacier National Park* in Montana there are many glaciers as well as high mountains and beautiful lakes (Fig. 243).

Another remarkable natural feature of the West is the *Grand Canyon of the Colorado*, in northwestern Arizona. Here, in the high plateaus, the river has cut a

Fig. 243. McDonald Valley, Glacier National Park, Montana

canyon which in places is more than a mile in depth. Its walls are rugged with cliffs and steep slopes, and the rocks are of bright colors.

153. Health Resorts.—The dry air in certain regions in the Plateau States is helpful in curing diseases of the lungs. Many invalids have recovered their health in this sunny region of dry and bracing air. *Colorado Springs*, near Denver, and *Phoenix*, Arizona, are among the more famous of the resorts.

Review of Sections 150 to 153.—1. What metals are found in the Plateau States? 2. Which are the precious metals? 3. How were the mines in the mountains located? 4. Which states produce the most gold? The most silver? 5. Where are the great copper mines? 6. Where are the lead mines? The zinc mines? 7. Name another mineral found in this region.

8. What manufacturing industries are found in the Plateau States? 9. How is trade with the rest of the world carried on?

10. Why is this an interesting region for the traveler to visit? 11. Where is the Yellowstone National Park? 12. What are the geysers? 13. Where is the Glacier National Park? 14. Where is the Grand Canyon of the Colorado? Describe it. 15. Why are some parts of this region good health resorts?

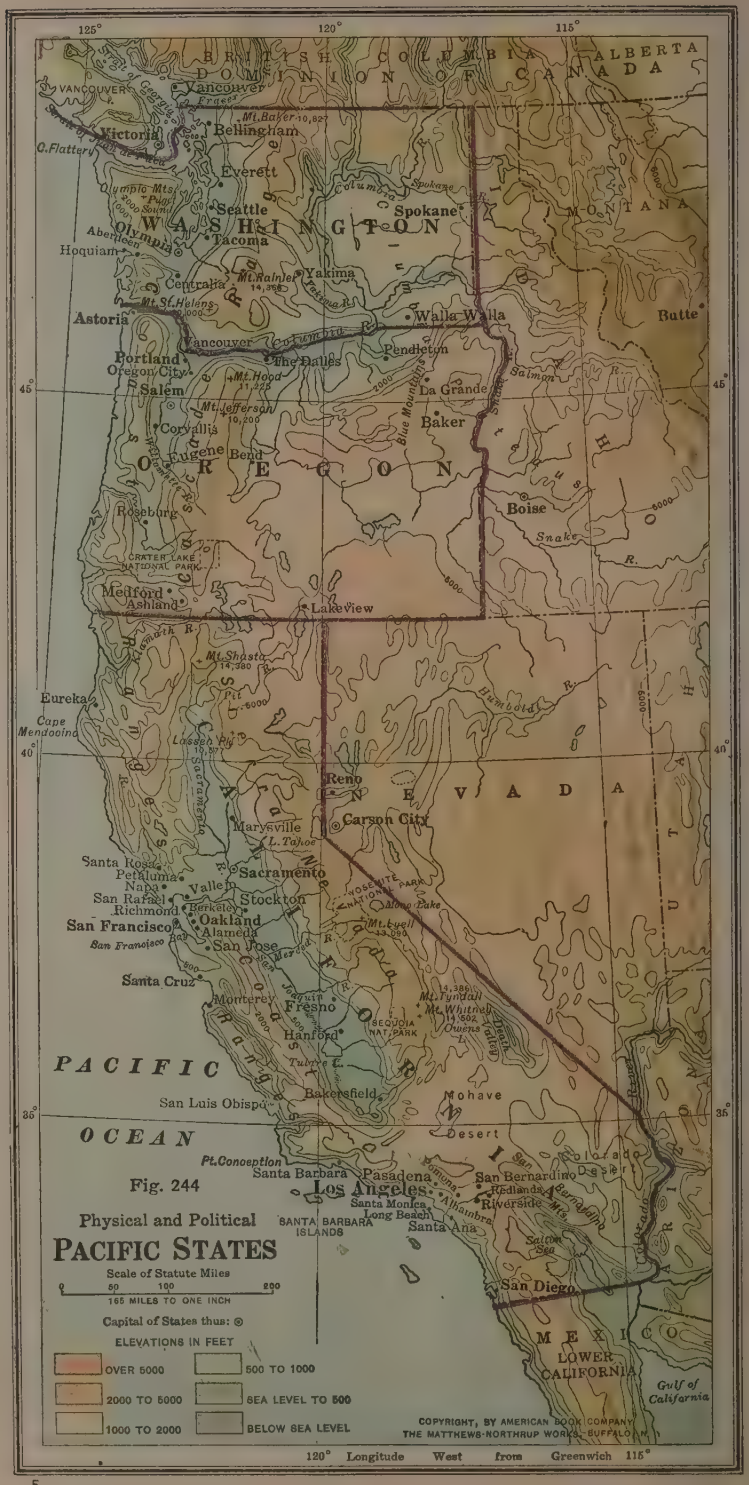


Fig. 244

THE PACIFIC STATES

154. Position and Coast Line.—There are only three states in the Pacific group: *California*, *Oregon*, and *Washington* (Fig. 244). California is larger than any other state in the Union except Texas.

Although all three states border on the Pacific Ocean, with a coast line that reaches from Canada to Mexico, there are few good natural harbors. Among them are several in Puget Sound and one at San Francisco Bay, where the mountain range along the coast is broken. The Columbia River has cut a valley across the mountains, and large ships can steam a long distance up the river. In what state is Puget Sound? San Francisco Bay? Where is the Columbia River?

155. Surface and Drainage.—In the eastern part of California is the mountain range called the Sierra Nevada. This range rises many thousand feet from the great valley at its western base, and is very steep on the east, where it faces the Great Basin. Toward the north, in its higher valleys, there are a few small glaciers, and snow fields that last throughout the year. Mt. Shasta, one of the highest mountains of the West, is in the northern part of the state.

The Cascade Range, which crosses Oregon and Washington, is really a continuation of the Sierra Nevada under another name. It is not so high as the Sierra Nevada but is much broader. The Cascade Range was given its name because of the cascades or waterfalls in the rivers that tumble down its sides. Mt. Hood in Oregon and Mt. Rainier in Washington are among the highest of the great peaks.

West of the Sierra Nevada and Cascade ranges are broad valleys, shut off from the Pacific by the low Coast Ranges which border that ocean. The Great California Valley is one of these. It is closed at the north by Mt. Shasta and other mountains, and is drained by the Sacramento and the San Joaquin rivers. One of the branches of the San Joaquin is the Merced River, which flows through the Yosemite Valley, a region of majestic and beautiful scenery (Fig. 245).

Fig. 245. Yosemite Falls, in the Yosemite Valley, California

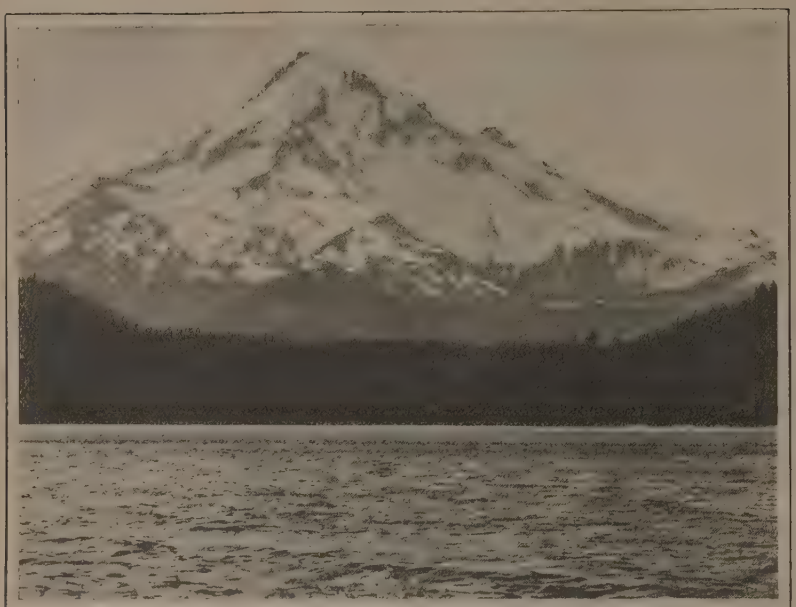


Fig. 246. Mt. Hood, Oregon, covered with snow and small glaciers

from the ocean. The great valleys are warmer in summer and cooler in winter than the coast regions, and they are always much warmer than the higher mountain slopes.

In the rainfall also there are great differences. Much of southern California has very little rain. The coast of Washington is the rainiest region of the United States. Most of the rain in the Pacific States falls in the winter. The heaviest rainfall is on the western slopes of the mountains because the winds that bring the rains come from the Pacific (Fig. 139). In the lowlands there is never much snow, even as far north as Washington, but in the high mountains the moisture often falls as snow, even in the summer. On some mountains, where it is so cold that the snow remains on the ground throughout the year, small glaciers are formed (Fig. 246).

The Willamette Valley in Oregon is similar to the Great California Valley. It is named from the river that drains it toward the north into the Columbia River. In Washington the corresponding valley opens on Puget Sound.

There are a number of short rivers on the western slope of the Coast Ranges. One large stream, the Columbia, with its chief tributary, the Snake, crosses the whole width of the Pacific region. It drains the high plateaus east of the Cascade Range.

156. Climate. — In a region that stretches for so great a distance north and south, and that has such high mountains, there are naturally great differences in temperature. In the desert region of southeastern California, it is hot even during the winter. In western Washington the temperature is mild at all seasons. The lowlands along the coast are kept cool in summer and are somewhat warmed in winter by the winds

Review of Sections 154 to 156.—1. Name the states in the Pacific group. 2. Which of them is next to Texas in size?

3. Where is the Sierra Nevada? The Cascade Range? 4. What three great valleys are west of these ranges? 5. By what rivers is the Great California Valley drained? 6. Where is the Yosemite Valley? 7. What mountains border the Pacific coast?

8. Where is the desert in California? 9. How is the temperature of the coast lowlands influenced by the ocean? 10. Where is there little rainfall? 11. Where is the rainfall heavy? 12. Where are there glaciers?

157. Agriculture.—The rainfall in most of Washington, western Oregon, and northern California is sufficient for agriculture without irrigation. In the Puget Sound and Willamette valleys, and in the northern part of the California Valley, fruit, vegetables, and grain are raised, and there are many dairy farms. In the southern part of California there is so little rain on the lowlands that crops cannot be raised without irrigation. Some crops also in eastern Oregon and Washington are irrigated. The water for irrigation is furnished by the streams resulting from the heavy rainfall on the mountains.

Fig. 247. Orange grove in southern California

California grows great quantities of fruit, wheat, barley, rice, cotton, and sugar beets. Among the fruits are grapes, oranges (Fig. 247), lemons, figs, peaches, plums, apples, and pears. Many of the grapes are made into raisins. Wheat is raised extensively in eastern Washington and eastern Oregon, largely by dry farming. Many sheep and cattle are raised in Oregon and California.

158. The Forests and Lumbering.—The heavy rainfall in the mountains and at the north has led to a wonderful growth of forest trees. Those on the western mountain slopes (Sec. 156) are the finest in the United States. Lumbering is a great industry in the Pacific States. Washington now produces more lumber than any other state in the country (Fig. 248). *Seattle* and *Tacoma*, on Puget Sound, and *Portland*, on the Willamette River, all ship large quantities of lumber.

Fig. 248. Lumber mill in Washington

Fig. 249. Train of oil tank cars leaving California

159. **Mining.**—Much gold is mined in California, and some silver and copper. It was the discovery of gold in California, in the year 1848, that caused the first great movement of people to the Pacific coast. This state still produces more of that precious metal than any other state in the Union. The value of the gold mined each year, however, is small as compared with the value of the other products of the state.

Petroleum is another product in which California takes very high rank (Fig. 249). Much of it is used as fuel just as it comes from the ground. In this part of the country many factories, railroad locomotives, and steamships use oil instead of coal.

There are several large smelting works on the Pacific coast for the treatment of ores mined in these states and in Alaska.

The chief coal beds of the Pacific States are in Washington.

160. **Fishing.**—Along this part of the Pacific coast there are valuable salmon and halibut fisheries. The salmon live in the ocean, but "spawn," or deposit their eggs, in the fresh, cold waters of mountain streams. Every year immense numbers of salmon leave the ocean and swim up the rivers of Washington and Oregon to spawn. On their way they are caught in fish wheels, traps, and nets. They are then canned (Fig. 250), or are put into refrigerator cars and shipped to market fresh. Halibut are caught in large numbers along the coast as far south as San Francisco.

161. **Manufacturing.**—There are now many great manufacturing industries on the Pacific coast. They include the sawing of lumber, the making of flour, the smelting of ores, and the canning of fruit, vegetables, and fish. Shipbuilding is another industry that is growing, because of our increasing trade with Alaska, Asia, Australia, and the islands of the Pacific.

162. **Commerce and the Cities.**—These states face the Pacific Ocean. On the opposite shore of the ocean live some of the oldest nations of the world. In recent years those ancient peoples have been changing their habits of life and adopting modern customs. Trade with Japan and China and other countries of the "Orient," as this part of the Old World is called, is constantly increasing.

Fig. 250. Cleaning room of a salmon cannery, Oregon

To the Orient we send oil, raw cotton, and goods made in the factories of our country. From the Orient we receive raw silk, tea, chinaware, and fine carvings, which are sent to all parts of the United States. Much of this trade passes through the ports in the Puget Sound region or through *Portland*, *San Francisco*, *Los Angeles*, and *San Diego*. These ports are all located on fine harbors and are connected with the East by great railways. Steamship routes to Atlantic ports have been greatly shortened by the Panama Canal.

Fig. 251. Mills at Spokane

Seattle and *Tacoma* are the chief cities in the Puget Sound region. Seattle carries on a large trade with Alaska and the Orient, and manufactures lumber and furniture. *Tacoma* has, besides its trade, large lumber and flour mills. *Spokane* has great water power (Fig. 251) and has become the trade center of a large inland region called "the Inland Empire."

Portland, although more than a hundred miles from the coast, is reached by ocean steamers and has a thriving foreign trade.

San Francisco is the chief seaport on the Pacific coast of America. Its beautiful harbor (Fig. 252) is reached from the ocean through a break in the Coast Range. The city was partly destroyed by a great fire in 1906, but was quickly rebuilt and is one of the finest cities of our country. Here are large sugar refineries and other factories: the city is important for its manufactures as well as for its great commerce.

Los Angeles is the largest city in California, and has an excellent harbor. It is in the heart of a wonderful fruit-growing district, and ships large quantities of fruit. Some of this is shipped fresh, as the use of special cars makes it possible to send it to eastern markets without spoiling. Some of the fruit is canned and much is dried. *Sacramento*, the capital of California, is an important manufacturing city.

Review of Sections 157 to 162.—1. Where is there sufficient rainfall for agriculture without irrigation? 2. What fruits are grown in California? 3. What states raise much wheat? 4. What grazing industry is carried on? Where?

5. Where are the forest regions? 6. Which of these states leads the country in the production of lumber? 7. Name three cities that are important lumber-shipping ports.

8. How did the mining of gold help the settlement of the West? 9. Where is petroleum found? 10. Where are the coal fields of the Pacific region? 11. What fuel is much used in the Pacific States?

12. What important fishing industry is carried on? Where?

13. Name some of the manufacturing industries of the Pacific States. 14. Tell about the trade between the United States and the Orient. 15. Name the great ports of the Pacific coast.

Fig. 252. Piers in San Francisco

160° Longitude 165° East 170° from 175° Greenwich 180° Longitude 175° West 170° from 165° Greenwich 160° 155° 150° 145° 140° 135° 130° 125° 120°
ARCTIC OCEAN
ASIA
Siberia
Gulf of Anadir
BERING SEA
PACIFIC OCEAN
Gulf of Alaska
CANADIAN YUKON TERRITORY
MACKENZIE DISTRICT
ARANGELL I.
HERALD I.
Pt. Barrow
Barrow
Franklin Pt.
Icy Cape
Arctic Circle
C. Lisburne
Pt. Hope
Carwin Coal Mine
Mt. Kelly
DeLong Mts.
Noatak
Baird Mts.
Rotzebue
Kobuk R.
Kotzebue Sound
C. Deshnef
Bering Strait
Diomede Is.
Seward Peninsula
Candle
Council
Teller
Bluff
Nome
C. Nome
C. Darby
Rocky Pt.
Norton Sound
C. Prince of Wales
Port Clarence
ST. LAWRENCE I.
STUART
Unalakleet
St. Michael
Kotlik
Andreafski
Iditarod
Nulato
Kaltag
Ruby
Yukon
C. Romanzof
C. Vancouver
NELSON I.
Bethel
ST. MATTHEW I.
NUNIVAK I.
International Boundary
Kuskokwim Bay
Kuskokwim
C. Newenham
HAGEMEISTER I.
Nushagak
C. Constantine
Bristol Bay
PRIBILOF ISLANDS
U. S. Gov. Res.
Chignik
Dutch Harbor
UNIMAK I.
SHUMAGIN IS.
ALEUTIAN ISLANDS
UNALASKA I.
UMNAK I.
FOX ISLANDS
ANDREANOF ISLANDS
ISLANDS OF THE FOUR MOUNTAINS
RAT ISLANDS
ATTU I.
NEAR ISLANDS
AMATTU I.
Arctic Circle
Beaufort Sea
Mackenzie Bay
Herschel I.
Manning Pt.
Mackenzie R.
Horton R.
Great Bear Lake
Ft. McPherson
Arctic Circle
Ft. Yukon
Bettles
Rampart
Ft. Hamlin
Circle
Fairbanks
Eagle
Fortymile
Dawson
McCarty
Klondike
McMillan R.
Pelly R.
Selkirk
Yukon R.
Tanana Crossing
Tanana R.
Hot Springs
Chena
Mt. McKinley 20,464'
Mt. Wrangell 14,500'
Mt. Blackburn 16,140'
Copper Center
Chitina
Chugach Mts.
Valdez
Knik
Tyonok
Anchorage
Kenai
Kenai Pen.
Spurr Mt.
Sunrise
Cordova
Mt. Logan
Mt. St. Elias
St. Ellis Range
White Horse
Teslin L.
Lake Bennett
White Pass
Skagway
Dyea
BRITISH COLUMBIA
Juneau
Douglas
Taku R.
Chilkat
Chilkoot Pass
Lynn Canal
Glacier Bay
Muhlspaugh Glacier
Yakutat Bay
Yakutat
Malaspina Glacier
Icy Bay
Seward
Prince William Sound
Controller Bay
Bering Glacier
Copper R.
Katalla
Cook Inlet
Tuxedni Bay
Iliamna L.
Iliamna Volcano
Shelikof Strait
AFOGNAK
Afognak
Kodiak
KODIAK I.
Sitka
BARANOF
Petersburg
L. Wrangell
PRINCE OF WALES I.
Ketchikan
Metlakatla
Dixon Entrance
Prince Rupert
QUEEN CHARLOTTE
ALEXANDER ARCHIPELAGO
CHICHAGOF
Railroads thus:
Telegraph and Cable Lines thus:
ELEVATIONS IN FEET
OVER 5000
2000 TO 5000
1000 TO 2000
SEA LEVEL TO 1000
Physical and Political
ALASKA
Scale of Statute Miles
0 50 100 150 300
270 MILES TO ONE INCH
THE MATTHEWS-NORTHRUP WORKS, BUFFALO N. Y.
COPYRIGHT, BY AMERICAN BOOK COMPANY
180° 175° 170° 165° Longitude West 160° from Greenwich 155° 150° 145° 140°

Fig. 253

Fig. 254. The summit of Mount McKinley, the highest peak of North America

OUTLYING POSSESSIONS OF THE UNITED STATES

163. Position.—Two outlying regions in the continent of North America are under the government of the United States. Alaska in the northwest forms a part of our country, and the Panama Canal Zone in the south is under our control.

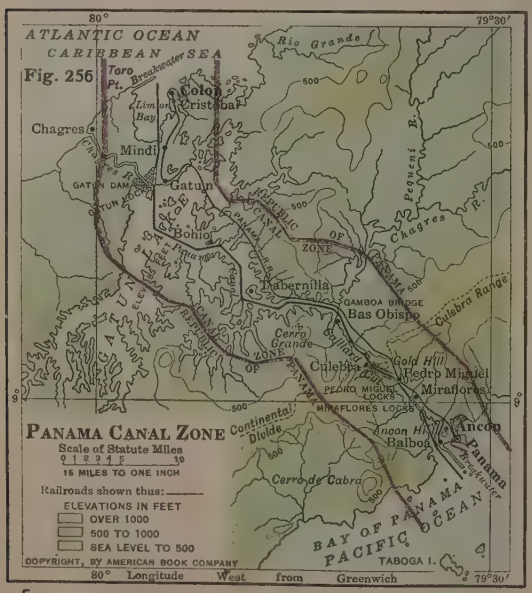
In the Pacific Ocean the United States includes the Hawaiian Islands, and owns the Philippines and a number of small islands. In the Atlantic Ocean our country owns the island of Porto Rico.

164. Alaska.—The territory of Alaska is nearly nine times as large as New England. Its northern shores are washed by the cold waters of the Arctic Ocean. On the west it is separated from Asia by Bering Strait, which connects the Arctic Ocean with the Bering Sea. From the southern shore a long peninsula extends southwest into the Pacific and from its western end the Aleutian Islands reach almost to the coast of Asia (Fig. 253).

The mountains on the southern coast are high and rugged; and about 100 miles back from the shore is the mountain range that includes Mt. McKinley, the highest peak on the continent (Fig. 254). The region through which the Yukon River flows is rough, but farther north along the Arctic Ocean there is a low plain.

During the summer southern Alaska is warm, but in the winter most of Alaska is intensely cold, especially in the interior. In the summer the warm winds from the Pacific bring much moisture. Along the coast this falls as rain, but in the mountains nearly always as snow. In the high valleys the snow has packed into drifts year after year and slowly changed to ice, forming great glaciers which creep down the valleys toward the sea. Some of the glaciers reach the sea at the heads of the long, narrow bays, or *fiords*. There the ice breaks off in icebergs.

The summer season is warm enough and long enough to enable grass and a few crops to grow. Large herds of reindeer are kept in the territory. Forests are found along the Yukon and in the southern valleys. The great industries of Alaska, however, are fishing and mining.



F

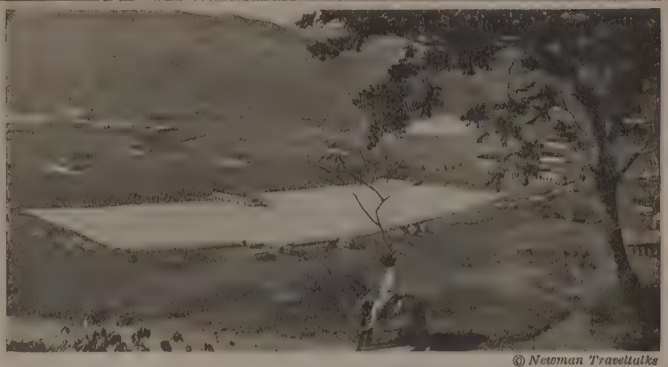
The fishing industry alone has yielded many times the amount of money which our government paid for Alaska.

Fur seals have been caught for many years along the coast and on the Pribilof Islands in the Bering Sea. The fur of these animals is very fine and soft after the long hairs have been pulled out. Sealskins are now very costly; although, by reason of the laws to protect the seals, their number is increasing.

Great numbers of salmon are caught in the streams of Alaska, so that the salmon is even more important than the fur seal. The value of the fish taken amounts to several million dollars every year.

It was known for a long time that there was gold in the Klondike district of northwestern Canada, and in several places in Alaska, but it was not until about 1900 that mining became a great industry there. Now many million dollars' worth of gold are mined in Alaska each year. The chief mines are at *Nome*, at *Fairbanks*, and near *Juneau*.

Travel in Alaska is difficult at all times, and very dangerous in the winter. A few good roads and some short railroad lines have been built, but not very many for so large a territory. The Yukon River is a great waterway for boats during the summer.



© Newman Travelstalks

Fig. 258. Tobacco fields and drying sheds in Porto Rico. Some of the fields are shaded with cotton cloth

165. The Panama Canal Zone. — Many years ago a French company was formed to dig a ship canal across the Isthmus of Panama. Only a small part of the work was done, however, before the company failed. In 1903 our government secured from the republic of Panama a strip of land ten miles in width across the isthmus (Fig. 256). Many men were employed and the work was done so rapidly that the great canal was completed in 1914. The use of the canal (Fig. 257) greatly shortens the ocean journey for ships sailing between our Atlantic ports and our own Pacific ports, as well as the ports of the west coast of South America and the east coast of Asia. It is used by many ships of all nations.

Fig. 257. A ship in the Panama Canal

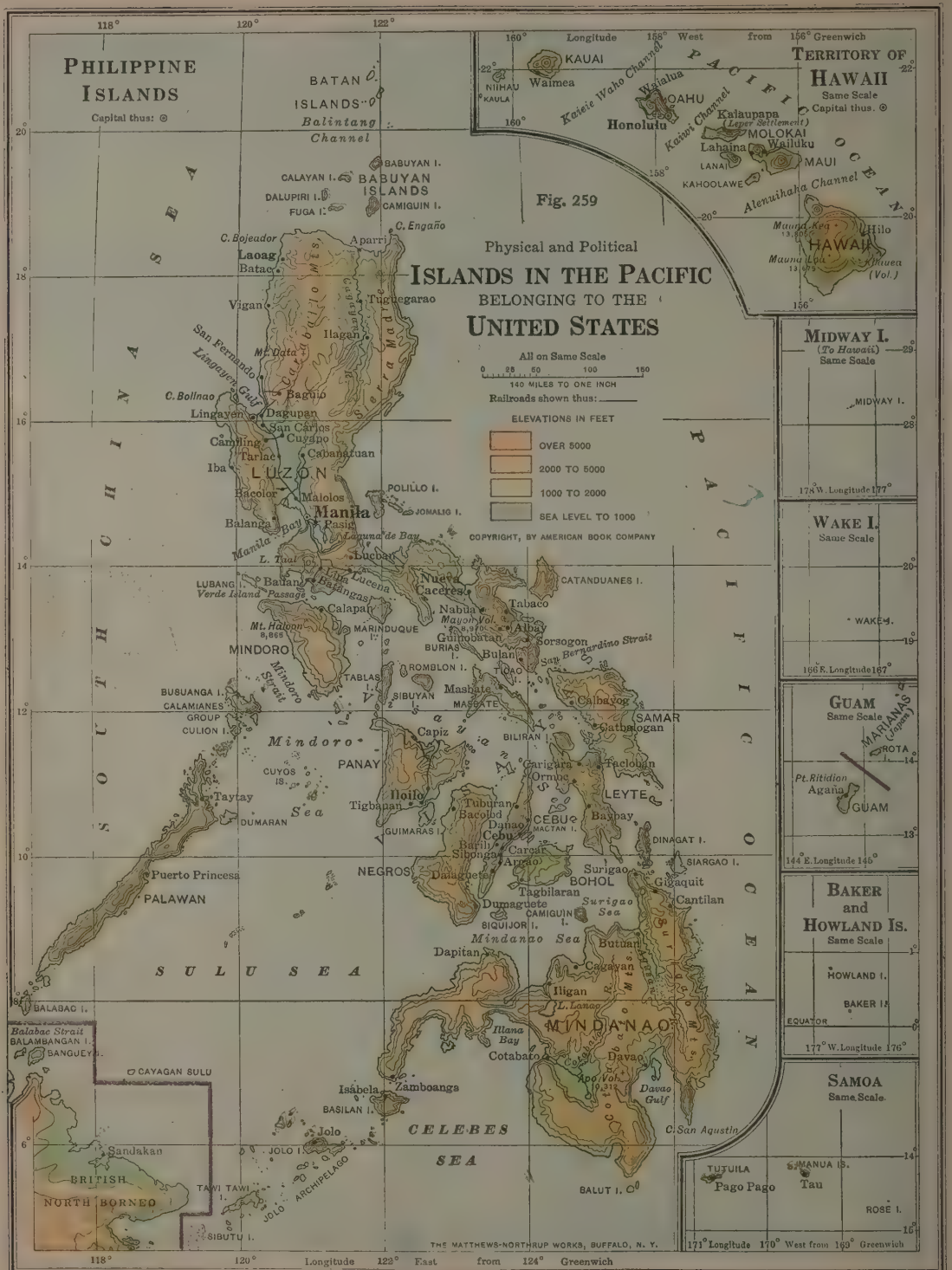
166. Porto Rico. Southeast of Florida and north and east of the Caribbean Sea is a group of islands known as the West Indies. One of these, Porto Rico, was ceded to our country by Spain, at the close of the Spanish-American war in 1898. It is about twice as large as Long Island. A low mountain range extends through it from east to west (Fig. 255). As most of the winds come from the northeast, the heaviest rainfall is on the northern side of the mountains.

The products of Porto Rico include oranges, pineapples, bananas, and other tropical fruits; coffee; tobacco (Fig. 258); and sugar cane, from which great quantities of sugar are made. Vegetables also are grown for the winter markets of our northern cities.

The chief cities and seaports are *San Juan* and *Ponce*, and the trade is largely with the United States.

About three fifths of the people of Porto Rico are white, and two fifths are negroes.

Not far east of Porto Rico are St. Thomas, St. John, and St. Croix, small islands bought by our country from Denmark in 1916.


PHILIPPINE ISLANDS
Capital thus: ⊙
BATAN ISLANDS
Balintang Channel
BABUYAN I.
CALAYAN I.
BABUYAN ISLANDS
DALUPIRI I.
CAMIGUIN I.
FUGA I.
C. Engaño
C. Bojeador
Aparri
Laoag
Batac
Tuguegarao
Vigan
Ilagan
Cagayan
Sierra Madre
Mt. Data
San Fernando
Lingayen Gulf
C. Bolinao
Baguio
Lingayen
Dagupan
San Carlos
Cuyapo
Camiling
Tarlac
Cabanatuan
Iba
LUZON
Bacolor
Malolos
Manila
Balanga
Bay
Pasig
Laguna de Bay
POLILLO I.
JOMALIG I.
L. Taal
Lucban
Lubang I.
Verde Island Passage
Batangas
Calapan
Nueva Caceres
CATANDUANES I.
Tabaco
Naba
Mayon Vol. 8,970
Albay
Mt. Halcon 8,865
MARINDUQUE I.
Guinobatan
Sorsogon
San Bernardino Strait
MINDORO
BURIAS I.
Bulan
ROMBLON I.
TICAO I.
Mindoro Strait
TABLAS I.
SIBUYAN I.
Masbate
MASBATE
Calbayog
SAMAR
Catbalogan
BUSUANGA I.
CALAMIANES GROUP
CULION I.
Capiz
BILIRAN I.
Mindoro Sea
PANAY
Carigara
Tacloban
Ormoc
LEYTE
CUYOS IS.
Taytay
Iloilo
Tigbauan
Tuburan
Bacolod
Danao
Cebu
CEBU
MACTAN I.
Baybay
DUMARAN
GUIMARAS I.
Barili
Sibonga
Carcar
Argao
DINAGAT I.
SIARGAO I.
Puerto Princesa
PALAWAN
NEGROS
Dalaguete
Surigao
BOHOL
Tagbilaran
Gigaquit
Cantilan
Dumaguete
Surigao Sea
CAMIGUIN I.
SIQUIJOR I.
Mindanao Sea
Butuan
Dapitan
Cagayan
SULU SEA
Iligan
L. Lanao
BALABAC I.
Balabac Strait
BALAMBANGAN I.
BANGUEY I.
MINDANAO
Illana Bay
Cotabato
Davao
Davao Gulf
CAYAGAN SULU
Isabela
Zamboanga
BASILAN I.
Jolo
CELEBES SEA
C. San Agustin
Sandakan
JOLO I.
JOLO ARCHIPELAGO
BRITISH NORTH BORNEO
TAWI TAWI I.
SIBUTU I.
BALUT I.
SOUTH CHINA SEA
PACIFIC OCEAN
Longitude 118° 120° 122° East from 124° Greenwich
Fig. 259
Physical and Political
ISLANDS IN THE PACIFIC
BELONGING TO THE
UNITED STATES
All on Same Scale
0 25 50 100 150
140 MILES TO ONE INCH
Railroads shown thus:
ELEVATIONS IN FEET
OVER 5000
2000 TO 5000
1000 TO 2000
SEA LEVEL TO 1000
COPYRIGHT, BY AMERICAN BOOK COMPANY
THE MATTHEWS-NORTHRUP WORKS, BUFFALO, N. Y.
Longitude 160° 158° West from 156° Greenwich
TERRITORY OF HAWAII
Same Scale
Capital thus. ⊙
KAUAI
NIIHAU
KAULA
Waimea
Kaieie Waho Channel
Waialua
OAHU
Honolulu
Kaiwi Channel
Kalaupapa
(Leper Settlement)
MOLOKAI
Lahaina
Wailuku
MAUI
LANAI
KAHOOLAWE
Alenuihaha Channel
PACIFIC OCEAN
Mauna Kea 13,805
Hilo
HAWAII
Mauna Loa 13,675
Kilauea (Vol.)
MIDWAY I.
(To Hawaii)
Same Scale
MIDWAY I.
178° W. Longitude 177°
WAKE I.
Same Scale
WAKE I.
166 E. Longitude 167°
GUAM
Same Scale
MARIANAS (Japan)
ROTA
Pt. Ritidian
Agaña
GUAM
144° E. Longitude 146°
BAKER and HOWLAND IS.
Same Scale
HOWLAND I.
BAKER I.
EQUATOR
177° W. Longitude 176°
SAMOA
Same Scale.
TUTUILA
Pago Pago
MANUA IS.
Tau
ROSE I.
171° Longitude 170° West from 160° Greenwich

Review of Sections 163 to 166.—1. Name the most important outlying possessions of the United States. 2. Which of these form part of our continent? 3. Which of the islands are in the Pacific? In the Atlantic?

4. How does Alaska compare in size with New England? 5. What waters border it? 6. Where are the Aleutian Islands? 7. Where is Mt. McKinley? 8. What is the nature of the country along the southern coast? Along the Yukon River? On the northern coast? 9. Where are the Alaskan glaciers? Why are they formed there?

10. What animals are kept in Alaska? 11. Where are the Alaskan forests? 12. What are the important industries of Alaska? 13. Where is the fur seal caught? 14. Why is it valuable? 15. Where are salmon caught? 16. Where are the gold mines?

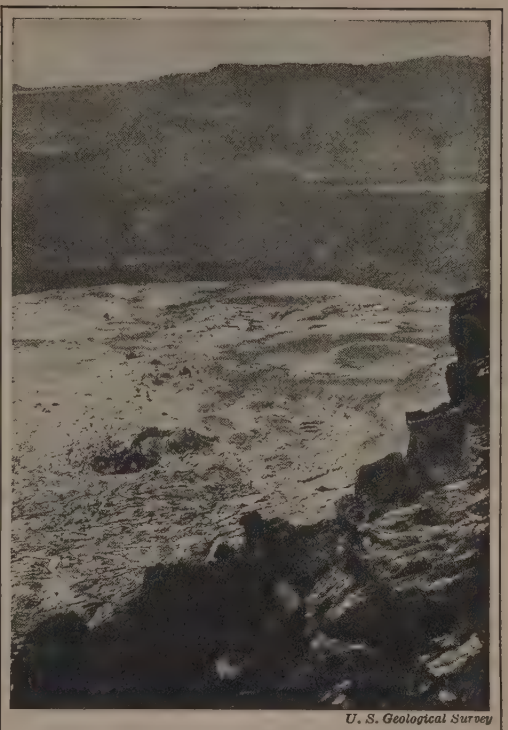
17. Why is the Panama Canal of much importance?

18. Where is Porto Rico? 19. How did the United States gain possession of it? 20. How large is it? 21. Where is its heavy rainfall? Why? 22. What are the leading products? 23. Where are St. Thomas and St. Croix?

167. The Hawaiian Islands.—The Hawaiian Islands came into the possession of the United States in 1898. They lie about 2000 miles southwest of San Francisco. Hawaii, with an area a little greater than that of Porto Rico, is by far the largest island of the group.

There are two active *volcanoes* on the island of Hawaii. Here melted rock, or *lava*, rises through openings in the earth's crust, and flows out over the surface of the land. Indeed, it is believed that all these islands were formed in this way and were built up from the bottom of the ocean. Where the melted rock has cooled around an opening in the crust it has built a cone-shaped mountain with a kind of chimney hole in the center.

In volcanoes like those in Hawaii, the melted rock rises into the basin-like *crater* (Fig. 260), at the top of the chimney, until it overflows the rim or breaks through the side of the mountain. There are many volcanoes in other parts of the world. In most of them the lava contains water which quickly changes to steam as the lava rises to the surface of the earth. The expansion of the steam blows the melted rock into fine pieces high in the air. When they fall to the earth again, they look like ashes. Many of the particles are carried long distances by the winds and fall in distant lands or seas. The decks of ships at sea may be covered with them. The heavier particles fall around the opening and help to build the volcanic cone higher. The highest volcanic cones or peaks are thousands of feet above the level of the sea.



U. S. Geological Survey

Fig. 260. Crater of an active volcano in Hawaii

The Hawaiian Islands are in about the same latitude, — that is, at the same

U. S. Geological Survey

Fig. 261. Bleak leeward side of the island of Oahu, one of the Hawaiian Islands

distance north of the Equator, — as Porto Rico; and their climate and products are similar. The temperature is warm and without great changes during the year. The chief winds are from the northeast, and the heavy rains are on that side of the mountains. As in Porto Rico, sugar cane is the chief crop. Most of the raw sugar is sent to San Francisco to be refined. Other crops include pineapples (Fig. 262), rice, and tobacco.

Fig. 262. Pineapple field, Hawaiian Islands

The chief city is Honolulu. Many ships stop there on their way between the ports of Asia and those of North America. Most of the commerce is with the United States.

People from China and Japan, as well as from America, have settled in the Hawaiian Islands.

168. The Philippine Islands.—The Philippine Islands, like Porto Rico, came into the possession of the United States as a result of the war with Spain. They are a long distance west of Hawaii, and a little farther south. They lie near the coast of southeastern Asia. The area of the whole group, which includes several hundred islands, is nearly twice that of New England. Two of the islands, Luzon in the north and Mindanao in the south, contain more than half of the total area. The land is hilly and in many sections mountainous. The temperature is warm, and the rainfall heavy, most of the rain coming in the summer.

The soil is rich and deep, and there are dense forests of valuable woods. Rice (Fig. 263), sugar, coconuts, and tobacco are raised. Another valuable crop is hemp,

the fiber of which is used for making the excellent Manila rope. Rice is the most important food of the native people, and in addition to that raised, much is imported. Most of the sugar is exported to the United States to be refined. Coconuts are used for food, or the meat is dried, making copra. Copra and coconut oil, extracted from copra, are exported to be used in the manufacture of a nut butter and of soap. It is known that the islands contain many valuable mineral deposits, and considerable gold is mined.

The principal city, *Manila*, is on the island of Luzon.

Fig. 263. Irrigated rice terraces, Luzon, Philippine Islands

Fig. 264. Native house, Guam

169. Other Islands.—There are several other Pacific Islands that belong to the United States (Fig. 259). Guam (Fig. 264) and Tutuila are the largest. They are chiefly important as coaling stations for warships and other government vessels that cross the Pacific. Guam was taken from Spain in 1898. Tutuila, with a few neighboring islands, was acquired in 1900. It possesses the harbor of Pago Pago, the finest in the Samoan group.

Review of Sections 167 to 169.—1. Where are the Hawaiian Islands? 2. Which one is the largest? 3. How were the islands formed? 4. What is lava? 5. What are the leading products of the Hawaiian Islands? 6. What is the chief city? 7. Why is it important? 8. Where are the Philippine Islands? 9. Name the two largest. 10. When did the United States get possession of them? 11. What are the chief products of the Philippines? 12. What has our country done for the education of the people there and in Porto Rico?

13. Name two other islands in the Pacific that are owned by the United States. 14. For what are they chiefly important?

North East Foreland
ARCTIC OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
GREENLAND
(To Denmark)
ICELAND
Hudson Land
Denmark Strait
Reykjavik
C. Farewell
Godthaab
Julianehaab
Sydprøven
Upernivik
Disko I.
Baffin Bay
Davis Strait
Hudson Strait
Resolution
C. Chidley
Ramah
Hopedale
Hamilton Inlet
Str. of Belle Isle
C. Bald
NEWFOUNDLAND
St. Johns
Cape Race
Gulf of St. Lawrence
Anticosti
Magdalen Is.
PRINCE EDWARD I.
NEW BRUNSWICK
NOVA SCOTIA
Halifax
Sable I.
C. Breton I.
St. John
Portland
C. Sable
Quebec
Montreal
Ottawa
Kingston
Toronto
Hamilton
London
Buffalo
Detroit
Sudbury
Cobalt
Lake Superior
Lake Michigan
Lake Nipigon
Port Arthur
Fort William
Kenora
Winnipeg
Brandon
Portage la Prairie
Regina
Moosejaw
Prince Albert
Saskatoon
Yorkton
Medicine Hat
Calgary
Banff
Edmonton
Dunvegan
Ft. Chipewyan
Ft. Nelson
Ft. St. John
Ft. Simpson
Ft. McPherson
Ft. Norman
Dawson
Mt. St. Elias
White Horse
Yukon R.
Mackenzie R.
Peace R.
Athabasca R.
Saskatchewan R.
Churchill R.
Nelson R.
Hayes R.
Albany R.
Moose R.
Abitibi R.
Ottawa R.
St. Lawrence R.
Saguenay R.
Hudson Bay
James Bay
Baffin Land
Ellesmere I.
Grant Land
Axel Heiberg I.
Melville I.
Banks Island
Victoria I.
Wollaston Land
Prince Patrick I.
Prince of Wales Island
Boothia
North Magnetic Pole
North Pole
Cockburn Land
Melville Peninsula
Southampton Island
Fox Land
Fox Channel
Cumberland Sound
Frobisher Bay
Payne L.
L. Minto
L. Mistassini
L. Temiscamingue
Lake Athabasca
Great Slave Lake
Great Bear Lake
Reindeer Lake
Lake Winnipeg
Lake of the Woods
Rainy R.
Duluth
Yellowknife
Aklavik
Herschel I.
Mackenzie Bay
Beaufort Sea
C. Barrow
Nome
Bering Strait
St. Lawrence I.
Bering Sea
Yukon
Alaska
Seattle
Tacoma
Portland
Victoria
Vancouver
Vancouver I.
Queen Charlotte Sound
Queen Charlotte Islands
Prince Rupert
Dixon Entrance
Sitka
Mt. St. Elias
Fig. 265
ELEVATIONS IN FEET
OVER 5000
2000 TO 5000
1000 TO 2000
SEA LEVEL TO 1000
Physical and Political
DOMINION OF CANADA
NEWFOUNDLAND AND GREENLAND
Capitals of Countries thus: ◎ Capitals of Provinces thus: ◎
COPYRIGHT, BY AMERICAN BOOK COMPANY
PROVISIONAL DISTRICT OF FRANKLIN
PROVISIONAL DISTRICT OF MACKENZIE
PROVISIONAL DISTRICT OF KEEWATIN
NORTHWEST TERRITORIES
YUKON
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
ONTARIO
QUEBEC
UNITED STATES
Scale of Statute Miles
0 100 200 300 400 500
485 MILES TO ONE INCH
THE MATTHEWS-NORTHRUP WORKS, BUFFALO, N. Y.
130° 120° Longitude West 110° from Greenwich 100° 70° 60°
170° 160° 150° 140° 130° 120° 110° 100° 90° 80° 70° 60° 50° 40° 30° 20° 10°
80° 70° 60° 50° 40°

Fig. 266. Lumber mill, British Columbia

THE NORTHERN COUNTRIES OF NORTH AMERICA

THE DOMINION OF CANADA

170. Position, Surface, and Political Divisions.—Canada, as Figure 265 shows, occupies the greater part of the continent of North America north of the United States. What ocean is north of Canada? What ocean is east? West? What lakes and river form a part of its southern boundary?

As in the United States, there is a great central plain between high mountains on the west and low mountains on the east. The northern coast line is deeply indented by Hudson Bay and by its southward extension, James Bay. Most of the drainage is either into these bays or into the Arctic Ocean.

Canada is divided into provinces and territories (Fig. 265) as our country is divided into states. Its government is much like that of the United States, but the highest officer is appointed by the government of Great Britain.

171. Agriculture, Dairying, and Forests.—North of the Great Lakes is the province of Ontario, the part of Canada that reaches farther south than any other part. Southern Ontario is one of the best of the Canadian farming and dairying regions. Wheat and other grains are raised, and the province is famous for its fruits, including apples, grapes, and peaches. The dairy farms produce large amounts of butter and cheese for local use and for shipment to England.

Farther east, there are many farms in southern Quebec, and in the provinces of New Brunswick, Nova Scotia, and Prince Edward Island.

International Newsreel

Fig. 267. Wheat harvest in Saskatchewan

Farther west are the fine wheat lands of Manitoba, Saskatchewan (Fig. 267), and Alberta, which are like those of the adjoining parts of the United States. In recent years the wheat-raising region has been rapidly extended. Enormous crops are now raised, and *Winnipeg*, in the southeastern part of this region, has grown to be a large city.

Cattle and sheep are raised on the drier plains of Alberta (Fig. 269), west of the wheat belt, and in the mountain pastures.

General farming is beginning to develop in the mountain valleys and along the coast of British Columbia, as it has already developed in the eastern provinces.

There are extensive forests in New Brunswick, Quebec, and Ontario, stretching from the United States as far north as Labrador and the southern part of Hudson Bay. The forests extend west as far as the treeless plains around Winnipeg. From there the forest reaches north and west in a narrow belt until it unites with the great forests of the western mountains. North of the forest belt are treeless plains, cold in winter but in summer covered with grass and flowers.

Fig. 268. Grain elevators at a railroad station, Saskatchewan

The trees of the eastern provinces are hardwoods, pines, and spruces. In the province of Ontario there are large pine forests. In the western mountains, especially on the Pacific slope, there are magnificent forests of fir, spruce, and cedar. Along the northern edge of the forest the trees are small, and when cut at all, are used for wood pulp.

There are large lumber mills at *Ottawa*, the capital of Canada. *St. John*, *Montreal*, *Toronto*, and *Vancouver* are other points for manufacturing and shipping lumber.

172. Mining.—The chief coal-mining regions of Canada are in Nova Scotia and in southern British Columbia, including Vancouver Island. Gold is found chiefly in the province of Ontario and in the Klondike district, east of Alaska. Some gold has been mined in the mountains of British Columbia. Silver, copper, and lead deposits also have been found here. The chief silver and nickel mines are in Ontario, near the upper Ottawa River. Large deposits have been found and many of the mines are very valuable. The iron mines of Canada are not yet extensively worked.

173. Hunting and Fishing.—When the early settlers first made their way into the Canadian wilderness, they found a great many fur-bearing animals. These animals were killed in large numbers and their skins taken to some settlement and traded for powder, shot, blankets, and other articles. Under English rule, a great company called the Hudson's Bay Company was formed to carry on the business of collecting furs. It is still in the business and employs many men.

Fig. 269. Sheep and lambs in Alberta, Canada

Fig. 270. In the business section of Toronto

Fishing is an important industry along the eastern coast of Canada, especially in the Gulf of St. Lawrence and on the Banks of Newfoundland. Large fishing fleets go out from *Halifax* and *Yarmouth* in Nova Scotia. Salmon fishing is a large industry in the rivers of the Pacific coast.

174. Trade Routes and Cities.—Canada trades chiefly with European countries and with the United States. Trade with Japan and China is growing rapidly and is carried on through *Vancouver*, the chief Canadian port on the Pacific. The leading eastern seaports are *Halifax*, on the Atlantic, and *Quebec* and *Montreal* on the St. Lawrence River. The cities on the St. Lawrence, however, are only summer ports, as the river freezes during the winter time. *Montreal* and *Toronto* (Fig. 270) are the largest of the Canadian cities, and have many factories.

Trade with the United States is carried on by rail, and also by boat along the coast and across the St. Lawrence and the Great Lakes. The river and the lakes furnish a route into the interior as important for southern Canada as it is for northern United States (Sec. 90). There are also railroads across the continent and many branch roads extending into all the more densely settled parts of the country.

NEWFOUNDLAND AND GREENLAND

175. Newfoundland.—The island of Newfoundland, with the eastern part of Labrador which is under the same government, is a colony of Great Britain, but not a part of the Dominion of Canada. It has a small population, whose chief occupation is fishing. In parts of the island there is a heavy growth of timber, and some paper and pulp mills have recently been built.

St. Johns, the capital, is in the southeastern part of the island. It is the only large town in Newfoundland.

Physical and Political
MEXICO
CENTRAL AMERICA AND WEST INDIES
Scale of Statute Miles
0 100 200 300 400 500 600
400 MILES TO ONE INCH
Capitals of Countries thus: ⊙
ELEVATIONS IN FEET
OVER 5000
2000 TO 5000
1000 TO 2000
SEA LEVEL TO 1000
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THE MATTHEWS-NORTHRUP WORKS, BUFFALO, N. Y.
Longitude West from Greenwich
UNITED STATES
MEXICO
GULF OF MEXICO
CARIBBEAN SEA
ATLANTIC OCEAN
PACIFIC OCEAN
CENTRAL AMERICA
SOUTH AMERICA
WEST INDIES
Tropic of Cancer
Havana
Kingston
Port au Prince
Santo Domingo
Mexico
Guadalajara
Monterrey
Matamoros
Tampico
Veracruz
Acapulco
Manzanillo
Mazatlan
Culiacan
Hermosillo
Chihuahua
Durango
Torreon
Saltillo
Laredo
San Antonio
Houston
Galveston
New Orleans
Mobile
Jacksonville
Savannah
Charleston
Atlanta
Memphis
Tampa
Key West
Nassau
Belize
Guatemala
Honduras
Nicaragua
Managua
Corinto
Bluefields
San Juan del Sur
San Juan del Norte
Punta Arenas
Limon
Panama
Gulf of Panama
Cartagena
Barranquilla
Caracas
Maracaibo
Medellin
Bogota
COLOMBIA
VENEZUELA
BRAZIL
Orinoco R.
Magdalena R.
Panama Canal
Isthmus of Panama
Gulf of Darien
Gulf of Fonseca
Gulf of Tehuantepec
Gulf of Honduras
Gulf of California
Lower California
Mexican Plateau
Sierra Madre
Yucatan Peninsula
Bay of Campeche
Florida Straits
Windward Passage
Mona Passage
Yucatan Channel
Cayman Islands
Jamaica (Br.)
Cuba
Haiti
Dominican Republic
Porto Rico
Bahama Islands
Turks Is.
Caicos Is. (Br.)
Virgin Islands (U.S.)
Leeward Islands
Windward Islands
Barbados
Trinidad (Br.)
Curaçao (Dutch)
Guiana
Pt. Gallinas
La Guaira
Port of Spain
Fig. 271

176. Greenland.—Greenland belongs to Denmark, one of the smaller countries of Europe. It is the largest island in the world. It is about one fourth the size of the United States. Its surface is almost entirely covered with a great sheet of ice. As in Alaska, the ice reaches the sea in many places. Huge icebergs are broken off and are a constant source of danger to ships in all waters into which they float. Along the southwestern coast there are a few inhabitants, most of them Danes and Eskimos.

Review of Sections 170 to 176.—1. What part of our continent does Canada occupy? 2. Where are its highlands? Its lowlands?

3. Which of the provinces reaches farthest south? 4. What are the chief industries of this province? 5. Where are the great Canadian wheat fields? 6. What important city has grown up there? 7. Where is the grazing region? 8. What industry is being developed in British Columbia?

9. Where are the Canadian forests? The Barren Lands? 10. Of what use are the small trees of the northern forest?

11. Where are the great mines of gold? Of silver? Of nickel? Of coal?

12. What is the Hudson's Bay Company? 13. Where are the chief fishing grounds? 14. Name two fishing ports.

15. With what countries does Canada trade? 16. Through what seaports is much of the European trade carried on? 17. Which ports are not used all the year? Why? 18. Name the leading Canadian port on the Pacific. 19. How is trade carried on with the United States? 20. With the interior of Canada?

21. What other colony of Great Britain is near Canada? 22. What industries are carried on there? 23. What is the chief town?

24. To what country does Greenland belong? 25. What part of it is inhabited? 26. With what is most of the island covered?

THE SOUTHERN COUNTRIES OF NORTH AMERICA

MEXICO

177. Size and Surface. Mexico, like Greenland, is about one fourth the size of the United States. Its more favorable climate, however, enables it to support a large population.

The coast line is long and regular, with few good harbors. What gulf is east of Mexico? What ocean is west?

Excepting the lowlands along both coasts, the northern and larger part of Mexico is a high plateau bordered by still higher mountain ranges. This plateau with its bordering mountains is a part of the Cordilleras of western North America. It is broadest at the north, and narrows rapidly toward the southeast. At the southern end, the plateau is shut in by a group of volcanic peaks. Some of them are so high that even in midsummer their higher slopes are covered with snow. Southeast of the plateau region the surface is very irregular, although there are some broad lowlands.

178. Climate. The eastern lowlands and the lower mountain slopes are hot. The winds are from the Gulf, and over parts of this region the rainfall is heavy. The higher mountain slopes and the plateau, which is about 6000 feet high, are much cooler. On the higher parts of the eastern mountain slopes, and over the eastern part of the plateau, the rainfall is usually sufficient for crops. The western part of the plateau receives less rain and is almost a desert in places. Here irrigation must be used if crops are grown.

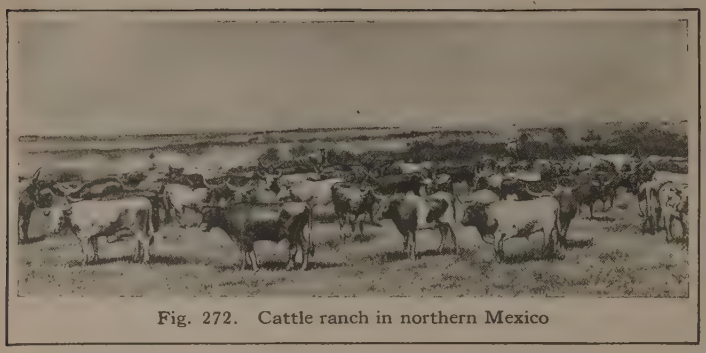

Fig. 272. Cattle ranch in northern Mexico

In the far south there are differences in temperature owing to differences in altitude, but the rainfall is heavy on both highlands and lowlands. The west coast and the peninsula of Lower California are hot and dry. Most of the rivers are mountain streams and are short and rapid.

179. **Industries.**—The differences in temperature and rainfall result in differences in the crops grown. The hot, moist parts of the country produce an abundance of tropical fruits, and here also are great rubber plantations. In the dense forests of these regions are found such valuable woods as mahogany, rosewood, and ebony. In places where it is not too hot, coffee, sugar cane, cotton, and tobacco are raised. The higher, more temperate regions produce corn and wheat. Some parts of the temperate region are irrigated. The dry plateau of northwestern Mexico is good only for pasture lands, and many thousands of cattle, sheep, and horses are raised there (Fig. 272).

The Mexican gold and silver mines are very rich. They were worked by the native people long before the New World was discovered by Columbus, and are still producing great quantities of these precious metals (Fig. 273). More silver is mined in Mexico than in any other country except the United States. Mexico also produces much petroleum (Fig. 274), and has mines of copper, lead, and precious stones.

180. **Cities and Trade.**—*Mexico*, the largest city and the capital, is in the southern part of the plateau. It is connected by rail with the United States and Central America, with the seaport of *Vera Cruz* on the east coast, and with smaller ports on the west. Most of the sea trade with Mexico is carried on through these ports. *Tampico*, on the east coast, is near the petroleum districts.

Fig. 273. Peons carrying ore from mine to railroad

Fig. 274. Oil wells, Mexico

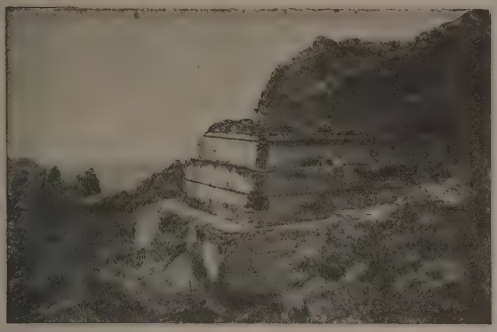

Fig. 275. Ruins of an ancient Indian temple, Mexico

181. History and People.—When the first white settlers from Europe reached the New World, they found it inhabited by Indians. Many of the Indian tribes lived chiefly by hunting and fishing, and wandered from place to place.

In Mexico, however, most of the Indians had learned to cultivate the fields, and they depended chiefly upon agriculture for their food. They made beautiful articles of gold and silver. They built large cities and temples, the ruins of which may still be seen (Fig. 275).

The first white people to visit Mexico did not intend to live in that country. All that they wanted was the gold and silver found there. They conquered the country and compelled many of the native Indians to work in the mines.

The present population is about one seventh that of the United States. Of the Mexicans one fifth are white people, two fifths are Indians, and two fifths are of mixed blood. Those of mixed blood have parents or ancestors who are not of the same race.

For about three hundred years Mexico was ruled by Spain, the country from which the white settlers came. Then the Mexicans set up for themselves a government like that of the United States. But their president often rules the country as he pleases.

Review of Sections 177 to 181.—1. Where is Mexico? 2. How does it compare with the United States in size? 3. What part of Mexico is a plateau? 4. Where are the lowlands?

5. What part of Mexico is hot? Which part is cool? Why? 6. Where is the rainfall heavy? Where is it light?

7. Where are the forests? 8. What valuable woods are found in the forests? 9. What crops are grown in the hot regions? In the temperate regions? 10. Where are the grazing lands? 11. What valuable products are taken from the Mexican mines?

12. Where is the city of Mexico? 13. Name a seaport of Mexico.

14. Who were the early inhabitants of Mexico? 15. What industry did they carry on? 16. What happened to these people?

Fig. 276. Cathedral, Mexico city

CENTRAL AMERICA AND THE WEST INDIES

182. Central America. The part of North America southeast of Mexico has for many years borne the name of Central America. It now includes a British colony called British Honduras, and six republics, Guatemala, Honduras, Salvador, Nicaragua, Costa Rica, and Panama.

Fig. 277. A banana plant

Fig. 278. Young coconut palms, Cuba

The surface of the region is irregular. There are lowlands along the east coast, and some mountains and hills in the west and southwest. The winds are from the northeast, and the heaviest rainfall is upon the eastern lowlands and mountain slopes. They are regions of dense forests, but with few inhabitants, as these lands are unhealthful. The southern and western mountain slopes are somewhat drier and cooler, and support a greater number of people.

The population consists of whites, Indians, negroes, and some of mixed race. Most of them do not have to work hard for a living, and wars are frequent. Tropical fruits (Fig. 277), coffee, and sugar are the chief crops. The forests yield rubber and valuable woods.

Guatemala is the largest city in Central America. *Colon* is at the north end, and *Panama* at the south end, of the canal across the isthmus.

183. The West Indies. The long chain of islands that shuts in the Caribbean Sea from the Atlantic Ocean is made up of two groups. One of them is known as the *Greater Antilles* and consists of four large islands, Cuba, Haiti, Jamaica, and Porto Rico. The other group, called the *Lesser Antilles*, is made up of many islands which are much smaller. They lie in a curve from a point near the eastern end of Porto Rico almost to the northern coast of South America. North of Cuba and Haiti, and east of Florida, is another group of small islands, called the *Bahamas*.

Of the larger islands, Porto Rico belongs to the United States (Sec. 166). The West Indies are in about the same latitude as the Hawaiian Islands. The climate and products are also much alike. Most of the time the winds come from the northeast, and the heaviest rainfall is on the northern and eastern sides of the islands. Sometimes violent whirling storms, called *hurricanes*, sweep over the West Indies, wrecking buildings, destroying crops, and killing people.

The leading industry is agriculture, and the chief crops are sugar and tobacco. Coffee, spices, bananas, oranges, and other tropical fruits are grown (Fig. 278). Another product is cacao beans, from which chocolate is made. In the forests many valuable trees are found.

The products of the Bahamas are like those of the other islands; but in addition to these, sponges are taken from the warm waters which surround the islands (Fig. 279). These animals are like masses of jelly when first brought to the surface. After the jelly-like substance is removed, a soft skeleton is left. This is the sponge that we use.

Fig. 279. Hunting sponges with glass-bottomed buckets and long rakes

Cuba, the largest of the West Indies, is now a republic under the protection of the United States. For many years it belonged to Spain, but the Cubans gained their freedom by a war in 1898 in which they had the help of the people of our country.

Haiti is divided between two small republics. Of the other islands, Jamaica, the Bahama group, and several of the Lesser Antilles belong to Great Britain, and the remainder to other European countries and to the United States. Trinidad, the largest of the Lesser Antilles, is one of the British islands. It has a valuable lake of asphalt, a substance used for street pavements (Fig. 280).

Havana, in Cuba, is the largest city in the West Indies, and *Kingston*, in Jamaica, is another port of importance. Much of the trade is with the United States, and steamships visit the islands on regular voyages.

Review of Sections 182 and 183.—1. Where is Central America? 2. What countries does it include? 3. Describe the surface of this group. 4. Where are the dense forests? 5. Where do most of the people live?

6. What are the chief crops? 7. What products are obtained from the forests? 8. Name three cities in Central America.

9. What islands are called the Greater Antilles? The Lesser Antilles? 10. Where are the Bahamas? 11. What islands on the Pacific are in about the same latitude as the West Indies? 12. Where is the heaviest rainfall? Why? 13. What are the important industries of the islands? 14. What are the products? 15. Where are sponges found? 16. How are they prepared for use?

17. How did Cuba gain its independence? 18. Which island has two negro republics? 19. Which group and which large islands belong to Great Britain? 20. Where is Trinidad, and what is its chief product?

21. Where are Havana and Kingston? 22. What country gets much of their trade?

Fig. 280. Digging asphalt, Trinidad

Fig. 281

Relief Map

SOUTH AMERICA

Scale of Statute Miles

0 100 200 300 400 500 600 700 800 900 1000

600 MILES TO ONE INCH

Lowlands are shown in green
Higher lands are shown in yellow or buff
Great elevations are shown in purple
Snow-covered peaks and slopes are uncolored
Other mountain slopes are shaded
Water is shown in blue

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Fig. 282. Aconcagua, the highest peak in America

SOUTH AMERICA

THE LAND

184. South America Compared with North America.—The continent of South America is southeast of North America, and is connected with it by the narrow isthmus of Panama (Fig. 283). What ocean borders South America on the north? What ocean is on the east? On the west? Into which ocean do most of the rivers flow?

The physical maps of the two continents (Figs. 134 and 283) show that in some ways they are much alike. They are of nearly the same size and have about the same shape. North America, however, is a little larger and has a more irregular coast line and a greater number of good harbors. In both continents the longer and higher mountains are in the west, and the shorter and lower mountains are in the east. Between the two highland regions in each continent there is a great central plain. In both continents the central plain is drained toward the north, the east and the south, by large, navigable rivers.

185. Climate.—In climate there are great differences between the two continents. The broad northern part of North America is cold even in the summer time, and in the winter the ground is frozen and usually covered with snow or ice. But the broad northern part of South America is in the hot part of the earth (Fig. 124). Here most of the

Caribbean Sea
CENTRAL AMERICA
Isthmus of Panama
Panama Canal
Gulf of Panama
Gulf of Darien
Pt. Gallinas
L. Maracaibo
TRINIDAD
Delta of the Orinoco R.
Orinoco R.
Meridan Mts.
Vol. Tolima
Llanos
Guiana Highlands
Sierra Parima
Sierra Pacaraima
Cassiquiare R.
Tumao Humao Mts.
Mouths of the Amazon R.
Rio Negro
Equator
MARAJO I.
Vol. Cotopaxi
Vol. Chimborazo
Gulf of Guayaquil
Pt. Parina
Yapura R.
Amazon R.
River
Maranon R.
Ucayali R.
Jurua R.
Purus R.
Falls of the Madeira
Madeira R.
Tapajos R.
Xingu R.
Tocantins R.
Parnahyba R.
Cape St. Roque
Mt. Huascaran
Andes Mts.
Acre R.
Guapore R.
Mamore R.
Brazilian Highlands
Serra do Parima
Serra do Paranan
Serra do Piauhy
Serra do Espinhaco
Serra do Mantiqueira
Mt. Sorata
Mt. Illimani
L. Titicaca
Vol. Misti
Plateau of Matto Grosso
Chapada
L. Aullagas
Plateau of Bolivia
Pilcomayo R.
Chaco
Mt. Itatiaia
C. Frio
Tropic of Capricorn
Atacama Desert
Salado R.
Paraguay R.
Parana R.
Iguassu R.
Victoria Falls
Serra Geral
Uruguay R.
Mt. Aconcagua
JUAN FERNANDEZ IS.
Pampas
Plata R.
Rio Negro
San Matias Gulf
Chubut R.
Patagonia
St. George Bay
C. Blanco
Strait of Magellan
FALKLAND IS.
TIERRA DEL FUEGO
SOUTH GEORGIA I.
Cape Horn
Pacific Ocean
Atlantic Ocean
2000
1000
100
80°
70°
60°
50°
40°
30°
20°
10°
0°
Longitude 60° West from Greenwich
Fig. 283
Physical
SOUTH AMERICA
Scale of Statute Miles
0 100 200 300 400 500 600 700 800 900 1000
600 MILES TO ONE INCH
ELEVATIONS IN FEET
OVER 5000
2000 TO 5000
1000 TO 2000
SEA LEVEL TO 1000
Depths in Fathoms
Sea Level to 100
100 to 1000
1000 to 2000
over 2000
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Fig. 284. Prevailing winds of South America

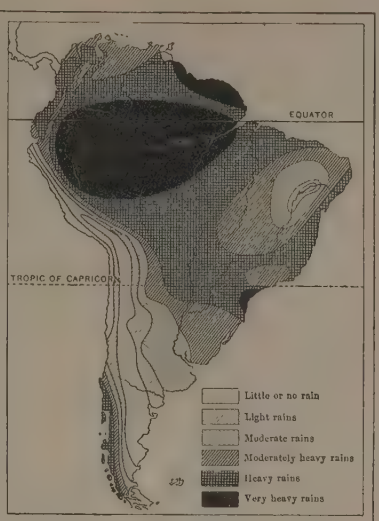

Fig. 285. Rainfall of South America

winds come from the Atlantic Ocean (Fig. 284). With them comes much moisture, which falls as rain on the great plain and on the eastern mountain slopes (Fig. 285).

It is always hard for men to work in a hot, moist country like this part of South America. Trees and plants there grow rapidly. In places they grow so rapidly that it is almost impossible to clear the ground and cultivate the soil. Much of the broad northern part of the continent is a dense forest where trees, vines, and bushes crowd close together. Such a region is very different from the cold, barren plains of northern Canada.

Southern South America is in the temperate part of the Southern Hemisphere, where the winds are from the west (Fig. 284). With them comes moisture from the Pacific Ocean, and rain and snow fall on the western slopes of the mountains. The eastern plains over which the winds pass after crossing the mountains, receive much less rain, although usually enough for an abundant growth of grass.

There is also rain along the northwestern shore of the continent (Fig. 285). Between this moist northern region and the rainy region of the south, the narrow coastal plain west of the great mountains is dry. In some parts it is a real desert. The winds from the east have crossed the mountains and have lost most of their moisture on the eastern side; and the winds over the Pacific Ocean blow away from the continent.

186. The Mountains, the Plains, and the Rivers.—The western mountains, known as the Andes, border the Pacific Ocean from the Strait of Magellan to the Caribbean Sea (Fig. 283). At the south they rise out of the ocean like a great wall. This is the region where the winds are from the west. The upper slopes are covered with snow, and glaciers are formed in the higher mountain valleys. Farther north, parallel ranges inclose high plateaus, and there is a narrow coastal plain between the mountains and the ocean.

The Andes are not so broad as the Cordilleras of North America, but they are much higher. Even at the Equator some of the peaks tower to such great heights that they are white with everlasting fields of snow.

The eastern highlands are much lower than the western, and are separated into two parts by the broad valley of the Amazon River. The northern part is

Fig. 286

Political

SOUTH AMERICA

called the Guiana Highlands, and the southern, the Brazilian Highlands. Both are plateaus with low ranges crossing them.

The largest part of the central plain is drained by the Amazon and its tributaries (Fig. 283). The land is low and nearly level. Much of it is covered with forests and is called *silvas* (Fig. 287). The river is broad and deep and carries more water to the sea than any other river in the world. On it large ships can go from the Atlantic to the foothills of the Andes.

Fig. 287. Silvas, South America

The northern part of the plain is drained by the Orinoco River and is called the *llanos*. During the rainy season the llanos are covered with grass which dries up during the dry season that follows.

The central plain south of the Amazon basin is drained by the Plata and its tributaries. This is a region of lighter rainfall than the Amazon Valley. In the western part there are great grassy plains called *pampas*, much like the western plains of the United States (Fig. 293).

Review of Sections 184 to 186.—1. In what direction is South America from North America? 2. How do the two continents compare in size? In form? In the position of their highlands and lowlands? In the drainage of the great plain? 3. Which continent has the more regular coast line? Which has the larger number of good harbors?

4. What winds blow over the broad part of South America? 5. What parts of this region have rain? 6. Where are the dense forests? 7. Why is there little agriculture here?

8. Where is the temperate part of South America? 9. From what direction do the winds come? 10. On which side of the mountains is the heavy rainfall? 11. Where are the grasslands?

12. What other part of the western coast has rain? 13. Where on the western coast is there little rain? 14. How do the Andes Mountains compare in height and width with the Cordilleras of North America? 15. Where are the eastern highlands? 16. Into what two parts are they divided? 17. By what river is the northern part of the great central plain drained? The southern part? 18. What are the silvas? The llanos? The pampas?

PEOPLE, ANIMALS, AND PLANTS

187. The People and their Industries.—Not long after the discovery of the New World, the people of Spain and Portugal learned that there were valuable mines of gold and silver in the mountains of South America. When they came in search of these precious metals they found the country already inhabited. The natives, like those of North America, were called Indians. Many of them were savages, but the Incas, who lived in the mountains of Peru, were almost civilized. They had learned to make cloth, pottery, and beautiful articles of gold and silver, and they built wonderful roads and stone buildings. The Spaniards conquered many of the natives, and settled in the Andes and in the basin of the Plata. The Portuguese settled in the eastern part of the continent. Some negroes were brought there from Africa.

Fig. 288. Llamas in Ecuador

Most of the people of South America are descendants of these early Spanish and Portuguese settlers, or of Indians, negroes, and persons of mixed blood. In the past few years other Europeans and men from the United States have settled there and are helping to work the mines and farms, and to build railroads and factories. The population of South America is less than half that of North America. All the countries are independent republics, except the Guianas.

The chief industries are mining, grazing, and agriculture. Mining is carried on chiefly in the mountain regions, and grazing on the grassy plains. Agriculture is developing in those parts of the country where the soil and climate are favorable, or where irrigation can be used. Coffee, wheat, cacao, and cotton are among the important crops.

Much of the commerce of South America is with European countries. The United States, however, has more South American trade than any other single country, and this trade is increasing. In addition to the three great river systems, which are navigable for hundreds of miles, South America has many railroads. Only one of them crosses the Andes.

188. Native Animals and Plants.— The llama (Fig. 288), an animal tamed by the Incas, is found on the higher slopes of the Andes. It is used to carry loads along the mountain paths. The alpaca, a similar animal, is especially valuable for its wool. The condor, the largest of birds, is also found in the higher Andes. The jaguar is a fierce and powerful animal much like the tiger of Asia. It is found in many parts of South America, and in Mexico and Central America. In the tropical forests there are serpents, monkeys, bright-colored insects, and birds with beautiful plumage, such as parrots. The rhea, a bird much like the ostrich, lives on the southern plains.

Corn and the potato, now known and cultivated in many parts of the world, were native plants of South America, and were grown by some of the Indians. The cinchona tree, from the bark of which the bitter medicine, quinine, is made, is also a native of this continent. Several varieties of rubber trees are found in the forests.

Review of Sections 187 and 188.—1. Why did people from Spain and Portugal settle in South America? 2. Where did they find Indians who were almost civilized? 3. What had these Indians learned to do? 4. Where did the Spaniards settle? The Portuguese?

5. What are the chief industries in South America? 6. Name several important crops. 7. With what other parts of the world do South American countries carry on commerce?

8. What is the llama? Of what use is it? 9. Name some of the other animals of South America. 10. What two important plants were grown by Indians in South America? 11. What is made from the bark of the cinchona tree?

COUNTRIES

189. Brazil.—Brazil is in the eastern part of South America. How does it compare in size with other South American countries (Fig. 286)? It is somewhat larger than the United States, with a population less than one third as great. The population is small because so much of the country is low, very rainy, and covered with a dense growth of vegetation (Sec. 185), and is in the hot part of the earth (Fig. 124), where only the natives can live and work comfortably. Most of the people of Brazil live in the cooler parts of the country, either in the south or in the highlands near the coast.

A few Indians live in the forests of the interior. They are often employed in finding rubber trees, and in preparing the crude rubber. They first cut gashes in the bark of the rubber trees and catch the milky sap in cups. The sap is collected daily. To prepare it for shipment it must be made into balls of crude rubber. This is done by pouring a little of the sap over a stick that is turned slowly around in the dense smoke of a fire of palm nuts. As soon as the sap dries on the stick, more is poured on and smoked, and the process is repeated many times until a large ball is formed. Most of the rubber is sent to the city of *Para*, near the mouth of the Amazon, and from this port it is carried in ships to the United States or to Europe.

In the plateau region of eastern and southern Brazil the chief industry is farming. Among the crops cultivated are coffee (Fig. 290), cotton, sugar cane, tobacco, and cacao. Of these crops, coffee is the most important, and Brazil now produces two thirds of the world's supply.

The ripe berries of the coffee shrub are often called "cherries" because of the fleshy covering, much like that of a cherry, which surrounds the two seeds, or "beans." In preparing the coffee for market, this fleshy covering is first removed. The beans are then spread out on large trays or platforms to dry, and are turned frequently to prevent their spoiling. Finally they are sorted and packed in sacks for shipment.

Fig. 289. Rubber trees

Fig. 290. Picking coffee, Brazil

Fig. 291. Entrance to the harbor of Rio de Janeiro, one of the most beautiful harbors in the world. The greater part of the city is farther to the left and is not shown in the picture

Fig. 292. Harvesting wheat, Argentina

In the forests are found woods used in the making of fine furniture, and woods from which dyes are made. Another tree of the forests is the cacao, from the seeds of which chocolate is made.

Cattle are raised on the grasslands in the central and southern parts of the country.

The chief mineral products of Brazil are gold and diamonds, which are found in the plateau region.

Rio de Janeiro, the capital, is the second city in size in South America. It is a large seaport with a fine harbor (Fig. 291). *Santos*, farther south, is the chief port for the shipment of coffee. *Bahia* and *Pernambuco*, on the coast to the north, export sugar and tobacco. *Para*, near the mouth of the Amazon, exports more rubber than any other port in America. *Manaos*, in the Amazon basin a thousand miles from the sea, is a rubber-shipping center.

Review of Section 189.—1. Where is Brazil? 2. How does it compare in size with the United States? 3. How do these two countries compare in population? 4. Where are rubber trees found? 5. How is the crude rubber prepared for market? 6. Where is the farming region of Brazil? 7. What are the important crops? 8. How is coffee prepared for shipment? 9. What other products are important? 10. Where are the grazing lands? 11. Where is the mining region? 12. Which of the following cities are on the coast, and which one is in the interior: Rio de Janeiro? Santos? Bahia? Para? Manaos?

190. Countries of the Plata Basin.—The three countries of the Plata basin are Argentina, Paraguay, and Uruguay.

Argentina is larger and has greater wealth than any other country of South America, except Brazil. The eastern part of the country is a vast plain which stretches through its entire length. What part is in the Plata basin? What mountains border Argentina on the west?

Argentina is in a temperate part of the earth (Fig. 124), and its crops are like those of the United States. In the northeast there is plenty of rain and it is warm enough to allow cotton, sugar cane, tobacco, and tropical fruits to be raised. Farther south, in the eastern part of the country, there are large wheat fields, and Argentina is one of the great wheat-growing countries of the world. Corn and flax also are grown in large quantities. Wheat, corn, and flax seed for making linseed oil are the most important agricultural exports.

Fig. 293. Branding cattle in Argentina

West of the wheat country and farther south are the grazing lands, where enormous herds of cattle and sheep find pasture (Fig. 293). Live cattle, frozen, salted, or dried meat, meat extracts, wool, hides, and tallow are exported.

Buenos Aires, on the Plata River, is the capital and great railroad center of Argentina. It is the largest city in South America and the chief port for the southeastern part of the continent. It has important and growing manufacturing industries (Fig. 294).

The two smaller countries of the Plata basin, Paraguay and Uruguay, have a heavier rainfall than Argentina. There are some forests, but the chief industry in both countries is cattle raising. Uruguay also raises large crops of wheat, and Paraguay grows tropical fruits. Most of the exports are like those of Argentina.

Maté, or Paraguay tea, is so called because it is used in the place of tea. It is made from the leaves of a tree that grows both in Brazil and in Paraguay. Maté leaves are exported to other South American countries.

Asuncion, the capital of Paraguay, is an important river port, and is connected by rail with Buenos Aires. *Montevideo*, the capital of Uruguay, is a large city and carries on much foreign commerce.

Review of Section 190.—1. Where is Argentina? 2. How does it rank among the countries of South America in size and wealth? 3. What are the chief crops in the northeastern part of the country? 4. Where is the wheat-raising region? 5. What other crops are raised? 6. Where are the grazing regions? 7. What agricultural products are exported? What cattle products? 8. Where is Buenos Aires? 9. Where is Paraguay? Uruguay? 10. What is the chief industry in each of these countries? 11. Name other products of each country. 12. Where is Asuncion? Montevideo?

191. Countries of the Andes.—There are four countries in the Andes group: Chile, Bolivia, Peru, and Ecuador. Of these Chile lies farthest south, on the west slope of the Andes. Using the scale of miles, find out how long Chile is from north to south (Fig. 286).

At the southern end the Andes are lower than they are farther north. They are in a region of heavy rains (Fig. 285), and their lower slopes and the rocky islands offshore are covered with forests.

Fig. 294. An avenue in Buenos Aires

Fig. 295. Farms in central Chile. In the background is a lake

In central Chile there is a long and narrow valley between the Andes and a lower coast range. This is the agricultural and grazing section of the country (Fig. 295). Some parts of it need to be irrigated, but it produces a great variety of crops. These include, at the south, grain and other products of temperate climates, and at the north, tropical fruits. Many cattle and sheep are raised.

Fig. 296. Nitrate mine

The most important industry of Chile is mining. Copper is mined in large quantities, and some gold and silver are found. The chief mineral deposits, however, are those of *nitrate*, in the dry northern part of the country (Fig. 296). From these deposits a whitish powder is prepared which is exported to the United States and European countries. It is used in the manufacture of gunpowder and of fertilizers.

Valparaiso is the chief seaport of Chile and one of the leading ports on the Pacific coast of South America (Fig. 297). It is connected by rail with *Santiago*, the capital, and across the Andes with Buenos Aires. Through Valparaiso the central valley agricultural region finds an outlet.

Nitrates are shipped from *Iquique*, *Antofagasta*, and other ports. As northern Chile is a desert, the fresh water needed both at the port and at the nitrate works is brought from the mountains in large pipes.

On the Strait of Magellan is *Punta Arenas*, the most southern city in the world.

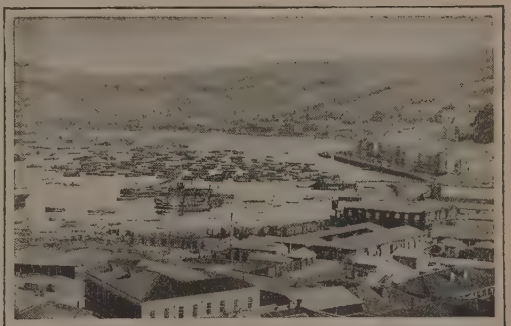

Fig. 297. The harbor, Valparaiso

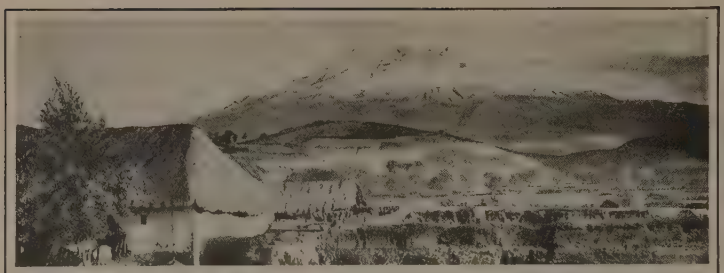

Fig. 298. Mt. Chimborazo, Ecuador, covered with perpetual snow

Chile is one of the most progressive countries of South America. As in Argentina and Brazil, there are free schools, and extensive railroads and telegraph lines. These three large and progressive countries are often called the A B C countries of South America, from the first letters in their names.

Bolivia once extended to the coast, but lost that part of its territory in a war with Chile. With this exception, Bolivia, Peru, and Ecuador are much alike.

There is a narrow coastal lowland which at the south is a desert, joining that of northern Chile. At the north this coastal plain is well watered and yields large crops where cultivated.

East of the coast region, the mountains of all three countries rise to great heights and inclose high plateaus and valleys. Both the plateaus and the western mountain slopes are cold and dry. They are cold because of the great elevation, and dry because the winds here are from the east (Fig. 284). Only the long eastern slope of the mountains, and the lowlands that join it on the east, receive much rain.

Agriculture and mining are the leading industries of Bolivia, Peru, and Ecuador. Most of the agriculture is in the irrigated valleys of the mountain streams, on the western side of the Andes. Cotton and sugar are raised in Peru, and cacao and cinchona trees in Ecuador. Rubber is obtained from trees that grow in the eastern forests.

The rich mineral deposits of the Andes still continue to yield gold, silver, copper, and tin, as they did in the days of the Incas. Tin ore is the chief export of Bolivia.

One interesting industry is the weaving of fine straw hats by the natives of Ecuador and Peru. The materials are kept quite damp for weaving, and the work takes much time. The hats are sent to our country by way of Panama, and for this reason are known as Panama hats.

A wonderful mountain railroad has been built from *Callao*, the principal port of Peru, to *Lima*, its capital. From that point it is continued for a long distance into the mountains (Fig. 299). Another line runs from *Mollendo*, a port in southern Peru, to Lake Titicaca, where it connects

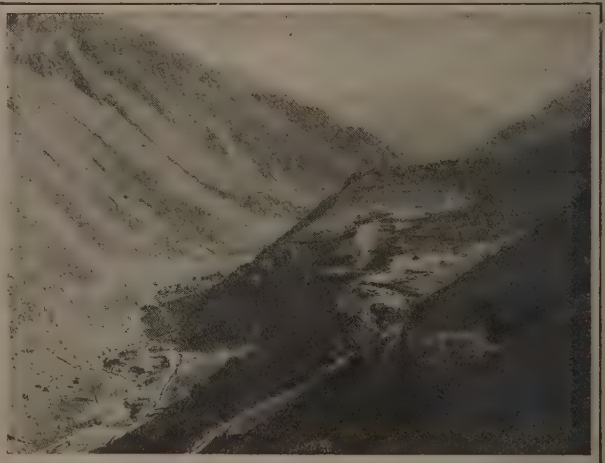

Fig. 299. Highway and railway through the Andes, Peru

Fig. 300. Water front and market, Guayaquil

with steamers. *La Paz*, the capital of Bolivia, is on a plateau more than two miles above the level of the sea. It is connected by rail with Pacific ports. *Guayaquil*, the chief port and city of Ecuador (Fig. 300), is joined to *Quito*, the capital, by railroad. The eastern parts of all these countries have an outlet to the Atlantic through the Amazon and its tributaries.

Fig. 301. Cacao pods on the trees

Review of Section 191.—1. Where are the great forests of Chile? 2. Why are there no forests in northern Chile? 3. Where is the agricultural and grazing section? What crops are produced there? 4. Where are the nitrate beds? 5. Of what use is nitrate?

6. Where is Valparaiso? 7. With what city east of the Andes is it connected by rail? 8. Where is Santiago? 9. From what port is most of the nitrate shipped?

10. Which are the A B C countries of South America?

11. What are the leading industries of Bolivia, Peru, and Ecuador? 12. Where are Panama hats manufactured? How did they get this name?

13. Where is Callao? 14. How is it connected with Lima? 15. In which country is La Paz? Guayaquil? Quito?

192. Countries of the North Coast.—The countries in the north coast group are Colombia, Venezuela, and Guiana. Which two of these border on the Caribbean Sea (Fig. 286)? Which one borders on the Pacific Ocean? All three countries are near the Equator and in the hot part of the earth (Fig. 124). In the mountains, however, the temperature is agreeable and the climate healthful.

On the coastal lowlands and in the valleys all kinds of tropical products are raised and exported, especially coffee, cacao (Fig. 301), and sugar. On the llanos of Venezuela and Colombia cattle raising is the great industry, and hides form an important export. In the higher and cooler regions some of the grains and fruits of temperate regions are grown. The mines produce gold and platinum. Among the exports are cinchona, tobacco, and rubber.

Guiana is the only one of the South American countries not now a republic. It is divided into three parts, which are colonies of three countries in Europe,—Great Britain, the Netherlands, and France. The chief exports are sugar, molasses, and cacao.

Bogota is the capital and largest city of Colombia, and *Barranquilla*, near the mouth of the Magdalena River, is the chief port. *Caracas*, the capital of Venezuela, is connected by a mountain railroad with *La Guaira*, the most important seaport. *Maracaibo*, in western Venezuela, on a lake of the same name, carries on a large foreign commerce.

Review of Section 192.—1. In what part of the countries of the north coast can people best live? 2. What are the chief products of this group of countries? 3. To what three countries of Europe do the three parts of Guiana belong? 4. Where is Bogota? Caracas?

Fig. 302
Relief Map
EUROPE
Scale of Statute Miles
0 100 200 300 400 500
430 MILES TO ONE INCH
Location of land below sea level is shown by arrows
Lowlands are shown in green
Higher lands are shown in yellow or buff
Great elevations are shown in purple
Snow-covered peaks, slopes and glaciers are uncolored
Other mountain slopes are shaded
Water is shown in blue
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THE MATTHEWS-NORTHRUP WORKS, BUFFALO, N. Y.

Fig. 303. A glacier in the Alps. Mountaineers crossing a great crack, or crevasse

EUROPE

THE CONTINENT

193. Size and Position.—The continent of Europe is smaller than any of the other continents except Australia. It is not very much larger than the United States. It is so much smaller than Asia that on a globe Europe looks like a huge peninsula of the larger continent.

The large land mass formed by Europe and Asia together is called Eurasia, and in some books it is described as a single continent. This is because the land connection between the two continents is so very broad, and is without a good natural boundary. But the people of Europe are very different from most of the people of Asia, and they live and work in different ways. Europe and Asia are partly separated by large seas, and they have generally been called separate continents, as they are in this book.

194. The Boundaries of Europe.—On the north, west, and south, Europe is bordered by the salt waters of the ocean, or of the gulfs, bays, and seas connected with the ocean. It is only on the east and southeast, where it joins Asia, that there are land boundaries (Figs. 302, 304, 306).

The coast line is very irregular. Indeed, no other continent has so long a coast line for so small an area. The bays and seas reach a long distance inland toward the center of the continent. There are also large peninsulas that extend into the bordering waters. Europe, like North America, includes many islands separated from the mainland by shallow seas.

Fig. 304

Physical

EUROPE

Scale of Statute Miles

0 100 200 300 400 500

430 MILES TO ONE INCH

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195. Surface.—The maps of Europe show that the most mountainous part of the continent is in the south. The greatest ranges run almost east and west, and cut off the southern peninsulas from the great lowland plain of northern and eastern Europe.

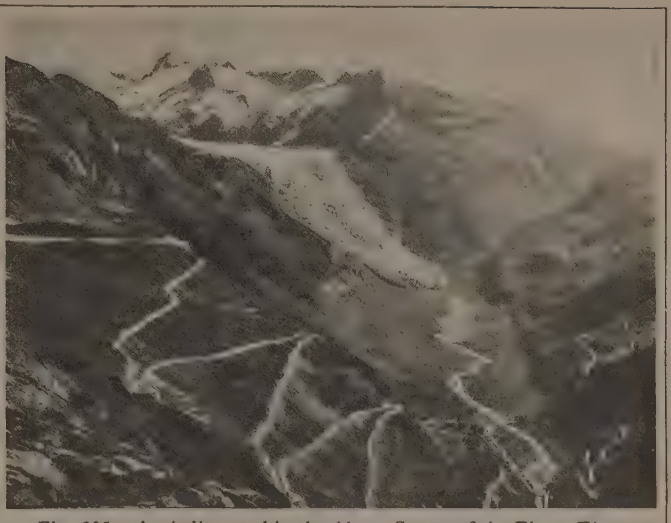

Fig. 305. A winding road in the Alps. Source of the Rhone River

Where is the Iberian Peninsula (Fig. 304)? The Italian Peninsula? The Balkan Peninsula? The Pyrenees are north of the Iberian Peninsula, the Alps are north of the Italian Peninsula, and the Carpathian Mountains are some distance north of the Balkan Peninsula. In each of the three peninsulas there are smaller ranges, the longest being the Apennines in Italy.

The highest of all the European mountains are the Alps. These mountains have high peaks and deep valleys and are visited every year by people from all parts of the world. For many hundreds of years the people living north of the Alps and those living south have traded with each other. In order to make it easy for traders and travelers to cross the mountains, many roads and railways have been built (Fig. 305). Several of the railroads pass under the higher mountain ranges through tunnels, one of which is more than twelve miles long.

On the map (Fig. 304) find the Black Sea; the Arctic Ocean; the Baltic Sea; the North Sea. The central lowland of Europe is widest in the eastern part, where it extends from the Black Sea on the south to the Arctic Ocean on the north. On the east this plain joins the great plain of northern Asia, and on the west it extends to the shores of the Baltic and North seas.

Northwest of the central lowland there are mountains in the Scandinavian Peninsula. Find this peninsula on the map (Fig. 304). There are also low mountains in the British Isles.

The Ural range borders the northeastern part of the continent and extends almost north and south. For much of its length it is low. It forms a part of the boundary between Europe and Asia.

196. Climate.—Most of Europe is in the temperate region of the Northern Hemisphere (Fig. 124). It has a mild climate both summer and winter, especially in the western part. The climate is mild because the temperature of the ocean does not change quickly, and the winds from the Atlantic Ocean are cooler than the land in summer and warmer than the land in winter. These winds from the Atlantic also bring much moisture to the continent (Figs. 308, 309).

ARCTIC OCEAN
ATLANTIC OCEAN
Arctic Circle
Reykjavik
ICELAND
Mt. Hekla
FAROE IS. (To Den.)
SHETLAND IS.
ORKNEY IS.
HEBRIDES IS.
Hammerfest
North Cape
Vardo
Murmansk
Kola Peninsula
Kanin Peninsula
KOLGUEV I.
NOVAYA ZEMLYA
VAIGACH I.
LOFOTEN IS.
Lapland
Trondhjem
Bergen
Stavanger
Tornea
Ulesborg
Archangel
Dvina R.
Pechora R.
Ural Mountains
SIBERIA
Ob R.
Tobol R.
Irtish R.
Tammerfors
Abo
Helsingfors
Gefle
Oslo
Christiania
Stockholm
Norrkoping
Goteborg
Lake Onega
Lake Ladoga
Gulf of Bothnia
Gulf of Finland
Leningrad (Petrograd)
Perm
Ufa
Ekaterinburg
Rybinsk
Yaroslaf
Kazan
Volga R.
Kama R.
Nizhni Novgorod
Samara
Orenburg
Reval
ESTHENIA
Riga
LATVIA
LITHUANIA
Kovno
Vilna
Minsk
Moscow
Vitebsk
Tula
Oka R.
Tver
Valdai Hills
Dvina R.
Dniepr R.
Orel
Kursk
Don R.
Saratof
Uralsk
Ural R.
Volga R.
Kief
Kharkof
Tsaritsyn
Ekaterinoslaf
Rostof
Astrakhan
Lemberg
Carpathian Mts.
Pruth R.
Dniester R.
Jassy
Kishenef
Odessa
Kherson
Sea of Azof
Krassnodar
Sebastopol
CRIMEA
Caucasus Mts.
Mt. Elbruz
Caspian Sea
Baku
Batum
GEORGIA
ARMENIA
Mt. Ararat
Araxes R.
Black Sea
Constantinople
Bosporus
Sea of Marmora
Angora
TURKEY
Smyrna
Salonica
Aegean Sea
Athens
Gulf of Corinth
CRETE
CYPRUS
Mediterranean Sea
Tripoli
Malta
Tunis
Algiers
Fez
AFRICA
Tangier
Gibraltar (Br.)
Malaga
Cadiz
Seville
Sierra Nevada
Murcia
Cartagena
Valencia
Barcelona
Madrid
SPAIN
PORTUGAL
Lisbon
Oporto
Tagus R.
Guadiana R.
Guadalquivir R.
Douro R.
Cape St. Vincent
Strait of Gibraltar
BALEARIC IS.
CORSICA
BARDINIA
Marseille
Leghorn
Florence
Genoa
Turin
Milan
Mt. Blanco
Pyrenees Mts.
Cantabrian Mts.
Bilbao
Bordeaux
Toulouse
St. Etienne
Lyon
Limoges
Loire R.
Garonne R.
Rhone R.
Cape Finisterre
Bay of Biscay
FRANCE
Brest
Cherbourg
Nantes
Orleans
Tours
Paris
Rouen
Amiens
Havre
Dieppe
English Channel
Strait of Dover
Calais
Boulogne
Antwerp
Brussels
Ostend
Ghent
Cologne
Aix-la-Chapelle
Liege
Namur
Meuse R.
Sambre R.
Scheldt R.
Rhine R.
Moselle R.
Marne R.
Seine R.
Somme R.
Loire R.
Dordogne R.
Rhone R.
Saone R.
Swiss Basin
Belgian Basin
Paris Basin
Aquitanian Basin
Rhone Basin
Lombardy Basin
Tuscan Basin
Apennines Mts.
Adriatic Sea
Dalmatian Mts.
Albanian Mts.
Ionian Sea
Sea of Crete
Aegean Sea
Strait of Otranto
Strait of Messina
Strait of Bonifacio
Tyrrhenian Sea
Mt. Vesuvius
Mt. Etna
SICILY
MALTA
CORFU
Ionian Sea
Palermo
Messina
Catania
Naples
Brindisi
Rome
Pisa
Zara
Cetinje
Tirana
Scutari
Sofia
Bitolia
Belgrade
Danube R.
Save R.
Drave R.
Transylvanian Alps
Bucharest
Jassy
Budapest
Vienna
Munich
Stuttgart
Nuremberg
Strasbourg
Basel
Zurich
Geneva
Lake Constance
Trieste
Fiume
Venice
Bologna
Ferrara
Milan
Turin
Genoa
Florence
Leghorn
Marseille
Nice
Monaco
Andorra
Saragossa
Ebro R.
Tagus R.
Guadiana R.
Guadalquivir R.
Douro R.
Oporto
Lisbon
Cape St. Vincent
Strait of Gibraltar
Tangier
Fez
Algiers
Tunis
Tripoli
Malta
Sicily
Corsica
Sardinia
Balearic Is.
Cape Finisterre
Bay of Biscay
Pyrenees Mts.
Andorra

EUROPE IN 1914, BEFORE THE WORLD WAR. For comparison with Fig. 306

Transfers of Territory
1. Germany to Belgium
2. Germany to France
3, 3. Germany to Poland
4. Germany to Danzig
5. Germany to Lithuania
6. Germany to Czechoslovakia
7, 7, 7, 7. Austria to Italy
8, 8, 8, 8, 8. Austria and Hungary to Yugoslavia
9. Austria and Hungary to Czechoslovakia
10. Austria to Poland
11, 11. Austria and Hungary to Rumania
12. Hungary to Fiume but later to Italy
13. Montenegro to Yugoslavia
14. Serbia to Yugoslavia
15, 16, 17. Bulgaria to Yugoslavia
18. Bulgaria to Greece
19. Turkey to Bulgaria
20. Turkey to Greece
21. Russia to Rumania
22, 22, 22. Russia to Poland
23. Russia to Lithuania, but later to Poland
24. Russia to Lithuania
25, 25. Russia to Latvia
26. Russia to Esthonia
27. Russia to Finland
Transfers subject to Plebiscite
28. Germany to Denmark (voted in 1919 to Denmark)
29. Germany to Poland (1921)
30. Sarre Basin, Germany to France (vote in 1935)
31. Turkey to Italy
Longitude East from Greenwich
FINLAND
SWEDEN
NORWAY
ESTHONIA
LATVIA
LITHUANIA
EAST PRUSSIA
POLAND
GERMANY
NETHERLANDS
BELGIUM
LUXEMBURG
SAAR BASIN
ALSACE-LORRAINE
FRANCE
SWITZERLAND
AUSTRIA
CZECHOSLOVAKIA
BOHEMIA
GALICIA
HUNGARY
TRANSYLVANIA
RUMANIA
YUGOSLAVIA
SERBIA
MONTENEGRO
BULGARIA
ALBANIA
GREECE
ITALY
TURKEY
ASIA MINOR
RUSSIA
UKRAINE
BESSARABIA
DOBRUDJA
Oslo (Christiania)
Stockholm
Helsingfors
Reval
Riga
Leningrad (Petrograd)
Moscow
Kiev
Odessa
Copenhagen
Berlin
Warsaw
Vilna
Prague
Vienna
Budapest
Bern
Trent
Trieste
Fiume
Zara
Belgrade
Bucharest
Sofia
Rome
Valona
Salonica
Constantinople
Angora
Smyrna
Athens
Rhodes
Crete
Brussels
The Hague
Danube R.
Rhine R.
Elbe R.
Vistula R.
Dniester R.
Pruth R.
Drave R.
Save R.
Maritza R.
Sea of Marmora
Dardanelles
Bosporus
Gulf of Bothnia
L. Onega
L. Ladoga
L. Peipus
Duna R.
Niemen R.
Aegean Sea
Adriatic Sea
Black Sea
North Sea
Fig. 307
TERRITORIAL CHANGES IN
CENTRAL EUROPE
SCALE OF MILES
0 100 200 300 400
Boundaries before the World War
New Boundaries
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Facing 189

Fig. 308. Prevailing winds of Europe

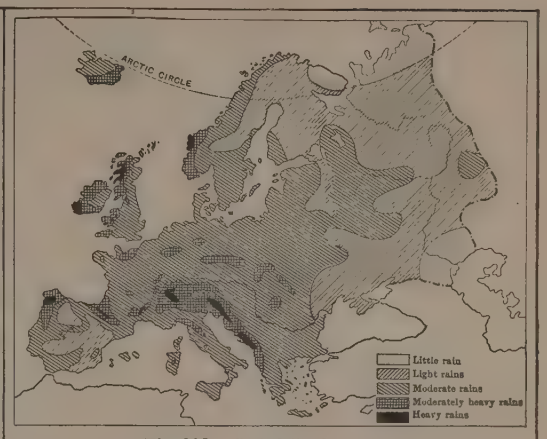

Fig. 309. Rainfall of Europe

The rainfall in the west, and especially on the western mountain slopes, is heavy. Eastern Europe, being farthest from the ocean, has less rain than any other part of the continent.

The rainfall in the Alps and in the Scandinavian mountains is heavy during a large part of the year. As is usual in high mountains, some of the moisture falls as snow. In the higher mountain valleys the snow packs into ice and forms glaciers (Figs. 303, 305).

197. Drainage.—On account of the heavy rainfall in the Alps, large rivers flow from these mountains in every direction. Not all these rivers are long, but their lower courses are navigable and are important trade routes for the countries through which they flow. The two most important are the Rhine and the Danube (Fig. 306).

On the map trace the course of the Volga, the longest river in Europe. Notice the other rivers flowing across the great plain. Many of the European rivers have been deepened and cleared of rocks to make them navigable. The more important rivers have been connected by canals, and much of the commerce of central Europe is carried on by water.

Review of Sections 193 to 197.—1. Which continent is smaller than Europe? 2. What name is sometimes given to the land mass of Europe and Asia?

3. What parts of Europe are bordered by water? 4. Where are the land boundaries? 5. How does the coast line differ from that of other continents?

6. In what part of Europe are the greatest mountain ranges? Name and locate them. 7. In what other parts of Europe are there mountains? 8. Where is the great lowland of Europe?

9. Why is the temperature of western Europe so mild? 10. Which parts of the continent have the heaviest rainfall?

11. In what part of Europe do several large rivers rise? 12. How have many of the European rivers been made navigable?

198. People and Industries.—Europe is only a little larger than the United States and Alaska, but it has four times as large a population. It is divided into many countries, each with its own laws and generally with a language of its own. Long ago, when our country was first settled, most of the explorers and settlers came from Great Britain, the Netherlands, France, and Spain. Later many

settlers came from Germany, Norway, Italy, Russia, and other countries. On the map (Fig. 306) find the eight countries above named.

Even at the present time many people every year leave Europe and come to our country to live. When they land here, few of them know our language, but they soon learn to speak it. Their children go to our schools, and most of them become useful citizens and good Americans.

There are so many people in Europe that they are not able to raise on that continent all of the food that they need or all of the necessary raw materials for their clothing. Most of the European countries must buy both food and raw materials from other lands, and must manufacture many things to sell in exchange. Manufacturing and commerce, as well as agriculture, grazing, and fishing, are very important industries in Europe.

Large crops of wheat, rye, and barley are raised, and are used in making bread. Potatoes and other vegetables are raised in large quantities, and in southern Europe corn and such fruits as grapes, oranges, olives, and figs are grown. Flax is raised for the fiber used in the manufacture of linen, and in southern Europe many silkworms for the raw material used in the manufacture of silk goods.

Among the mountains and in other parts of Europe are extensive pastures for cattle and sheep. The flesh of these animals is used as food, their hides for leather, the wool for the manufacture of clothing, and much of the milk for making butter and cheese. Large quantities of fish are caught in the shallow waters of the North Sea and along the coasts of France, Great Britain, and Norway.

Besides the manufactures of food and clothing, there are many other manufacturing industries. These include the making of such different things as great ships, fine machinery, and artistic jewelry.

In addition to canals and navigable rivers (Sec. 197), Europe has many railroads. Nearly a third of all the railroad track in the world is in this continent. Most of the great ocean steamships in the world belong to Europeans.

199. The World War.—In August, 1914, a great war began in Europe—the greatest war in the history of the world. Most of the European nations took part in it, and finally our own country also. This war came to a close in November, 1918, although treaties of peace were not signed until much later.

During the war millions of people were killed or crippled. Hundreds of villages and many large cities were wholly or partly destroyed. Forests and farm lands were ruined. Mines and factories were wrecked. For a long time after the war there was a shortage of food, clothing, and machinery, both in Europe and in other parts of the world.

Figure 307, with the two maps just before it, shows clearly the European changes in territory resulting from the World War.

Review of Sections 198 and 199.—1. How does the population of Europe compare with that of our country? 2. From what parts of Europe did men come to settle our country?

3. What two things do most European countries have to buy from other lands? 4. What do they sell in exchange? 5. What are the important industries of Europe?

6. Name some of the crops that are raised. 7. What use is made of flax fiber? 8. What animals are raised for food? 9. Where are the fishing grounds?

10. How many years did the World War last? 11. What were some of its results?

Fig. 310. An English country house in the lowlands, with barns and cattle

GREAT BRITAIN AND IRELAND

200. Position and Surface.—West of the mainland of Europe, and separated from it by the North Sea, the Strait of Dover, and the English Channel, are two large islands. The larger island is Great Britain, the government of which controls also Northern Ireland. The rest of Ireland was in 1922 organized as the Irish Free State. Great Britain is divided into England, Wales, and Scotland. England is the largest of these divisions and has the most people.

Neither of the islands has high mountains and there are only a few prominent peaks. The chief highland areas are in the northern and western parts of Great Britain.

There is a small lowland in central Scotland, and there are larger lowlands in central and southeastern England and in the interior of Ireland (Fig. 310).

201. Great Britain: Agriculture and Fishing.—Northern Scotland is rough and barren. Swept by the winds from the Atlantic, it has a heavy rainfall and a cool temperature. Although the soil is thin, there is usually an abundant growth of grass, and in most of this region grazing and dairying are the only industries of importance. The Scotch Highlanders tend many herds of cattle and flocks of sheep; and the chief products of the country are meat, milk, butter, hides, and wool.

In southern Scotland, northern and western England, and Wales, the highlands are less rugged. In these regions also grazing and dairying are common occupations, but, as we shall see later, mining and manufacturing are of even greater importance.

In the lowlands of Great Britain, especially in central and southeastern England, the soil is good, and large crops are raised. The chief products are wheat, oats, barley, hay, and vegetables. The rolling hills, or "downs," of southern England furnish pasture for large flocks of sheep.

Fig. 311. A fishing village in Scotland, on the North Sea

Along the coast of Great Britain are villages of fishermen (Fig. 311). Large numbers of fish are caught in the shallow waters of the North Sea and along the northern and western coasts.

The agricultural, grazing, and fishing industries of Great Britain do not furnish enough food for the people, and great quantities are imported from other parts of the world. Great Britain is about the size of our state of Oregon, yet it contains nearly half as many people as the United States. This is a very large population for so small a country, and great industries have been built up to give the people employment. What are these industries?

202. Great Britain: Mining, Manufacture, and Commerce.—The most important industry of Great Britain is manufacturing. But this industry would not have become so great without the many large deposits of coal that are found in several parts of the country. Enough coal is mined (Fig. 312) to furnish all the necessary heat and power for homes and factories, and to provide an abundance for export.

Near several of the deposits of coal there are rich beds of iron ore. The manufacture of iron and steel is the chief business of many cities, large and small, which have grown up near these deposits.

Among the largest of the iron and steel manufacturing cities are *Birmingham* in England and *Glasgow* in Scotland. Glasgow is best known for the building of steel ships. *Sheffield* is famous for its manufactures of steel, especially for its knives and other cutlery.

The largest of the manufacturing industries in Great Britain is the making of cotton goods. All the cotton used comes from other countries, most of it from the United States. *Manchester* is the center of the industry. This is partly because the air in western England is always moist. Moist air is necessary in the manufacture of the finer grades of cotton goods.

Fig. 312. Entrance to an English coal mine

Fig. 313. Making steel street cars, England

Britain furnish only one fourth of the amount. The other three fourths are imported from Australia, Argentina, and other countries. Great Britain has become a great commercial nation. Its ships sail every sea and reach every important port of the world. The welfare of the British people is dependent upon the safety of their commerce, and a very large navy is kept to protect their ships and their foreign possessions.

For many years all the cotton was first landed at *Liverpool*, a large port and manufacturing city on the west coast of England. From there it was sent to Manchester and to other cotton-manufacturing cities by rail. There is now a ship canal between Liverpool and Manchester, and many of the cotton ships go directly to the Manchester docks.

Woolen manufactures are carried on in east central England, in the city of *Leeds* and in the towns near it. Some of the cities of Scotland also are engaged in this industry. So much wool is needed that the sheep of Great

The chief seaports of Great Britain are London, Liverpool, and Glasgow. *London* is on the Thames River, about 50 miles from the sea, but the river has been dredged and large ships are able to reach

Fig. 314. A trans-Atlantic steamship at dock in Liverpool

Fig. 315. A busy street near the center of London. Busses are used in place of street cars

its docks. It is the capital of Great Britain and of the British Empire, and is the largest city in the Old World (Fig. 315).

203. The British Empire.—The British people have long been active in exploring and settling new lands, many of which lands they still own. They have also gained control of some parts of the older countries of the world. British possessions include Canada, Australia, India, and several other regions in Asia, Africa, and South America, also many islands. All these possessions, with the mother country, make the British Empire one of the largest and most powerful empires of the world.

The king of Great Britain has very little power. The government is controlled by those members of Parliament who are elected by the people.

204. Ireland.—Northern Ireland is the best agricultural region in the island. It raises oats, potatoes, and most of the flax from which Irish linen and laces are made. For centuries these products were manufactured in the homes of the people. Most of the linen, however, is now made in factories. *Belfast* is the center of the industry (Fig. 316). Find it on the map (Fig. 306). This city is also engaged in shipbuilding.

The Irish Free State is largely a grazing region but with much farm land. Under the new government the people hope to improve their industries, especially their farming.

Dublin, like Belfast, is a shipbuilding center. Both cities get most of their iron and coal from Great Britain, as Ireland has little coal and few forests.

For fuel the country people use peat which they dig out of swamps. It consists of a mass of plant roots and other vegetable matter that has been kept from decay by the water.

Fig. 316. Bleaching linen near Belfast, Ireland

Review of Sections 200 to 204.—1. By what bodies of water are Great Britain and Ireland separated from the mainland of Europe? 2. What sea lies between Great Britain and Ireland? 3. Into what three parts is Great Britain divided?

4. Where are the highlands of Great Britain? 5. Why are the highlands of Scotland so cool during the summer? 6. What are the leading industries of northern Scotland? 7. In what other parts of Great Britain is there much grazing?

8. Where are the chief agricultural regions of Great Britain? 9. What are the leading crops? 10. Why must Great Britain import food?

11. What is the leading industry in Great Britain? 12. What mineral deposits have made this industry possible? 13. Where are iron and steel goods made? 14. For what industry is Glasgow noted? Sheffield? 15. What is the largest manufacturing industry of Great Britain? 16. Where does the raw material come from? 17. What city is the center of this industry? Why? 18. What port once handled all the raw material? Why does it not do so now? 19. Where are woolen goods manufactured in Great Britain? 20. Where does the wool come from?

21. Why does Great Britain keep a large navy? 22. What cities are the chief seaports? 23. Name something for which London is famous. 24. What is the British Empire?

25. For what industry is Northern Ireland famous? 26. What city is the center of linen manufacture? 27. What are the chief industries of the Irish Free State? 28. What cities are engaged in shipbuilding? 29. What fuel is used in the country districts?

Fig. 317. Cultivated fields in southeastern Germany

GERMANY

205. Position and Size.—Germany was for many years an empire, but after its defeat in the World War it became a republic. The country is smaller than it was before the war (Figs. 306 and 307); but still it is larger than the six New England States and the three Middle Atlantic States combined. It is separated into two parts by Poland. It has land boundaries on the east, south, and west, but most of its northern boundary is formed by the waters of the North and Baltic seas.

Northern Germany and northeastern Germany are low plains. Southern Germany is high and includes a small part of the northern Alps. The central part is a region of hills and low, forest-covered mountains. The general slope of the land is from the south to the north.

206. Agriculture and Grazing.—On the northern plain the summers are warm and the winds from the Atlantic Ocean bring enough rain to make it possible to raise large crops. The higher and rougher country farther south also has much good farming land (Fig. 317). Along some of the rivers the slopes have been built into terraces.

The leading crops are sugar beets, potatoes, rye, oats, barley, and wheat. Potatoes and the "black bread" made from rye and barley are the chief food of the poorer people. Many grapes are grown on the terraced slopes of the upper Rhine valley. Hops are also grown in abundance.

Cattle, horses, sheep, and hogs are raised, especially on the uplands and wherever the soil is too poor for cultivation. Some fishing is carried on along the coast, but the industry is not so important as in Great Britain. Because of its large population Germany must import part of its food supply.

207. Forests and Mines.—The forests of Germany cover about one fourth of its surface and are carefully tended and protected. Only large trees or poor ones are cut down, and when this is done great care is taken not to injure those that are left. Even the small twigs and branches are picked up to be used for fuel, and to prevent the starting of forest fires.

Coal and iron are found in several parts of Germany, and there are valuable deposits of silver, lead, zinc, copper, and salt.

208. Manufacturing.—Most of the grain crops are used in the manufacture of flour, and a good flour is also made

from potatoes. Grapes are used in the making of wine, and hops in brewing beer. Germany raises more beets and makes more beet sugar than any other country.

Other manufactures in Germany include the making of cotton, woolen, and linen goods and the printing of books. *Essen* is the center of a great steel-manufacturing industry.

209. Commerce and Cities.—Germany, like Great Britain, must have food for its people, raw materials for its factories, and markets for its manufactures. In 1914 it was a great commercial nation. It imported grain, meat, cotton, and wool, and exported sugar, wine, medicines, dye stuffs, and many other kinds of manufactured goods. At the close of the World War, Germany was left with but few ships and little of its foreign trade.

Hamburg and *Bremen* near the North Sea, and *Stettin* on the Baltic, are seaports and shipbuilding centers. Ports on the Baltic can be reached from the North Sea through a ship canal which cuts across a narrow part of Germany south of Denmark.

Several large rivers rise in the southern mountains and flow across central and northern Germany to the Baltic and North seas. The Danube, however, flows east to the Black Sea. These rivers are navigable for long distances, and are connected by canals. Many boats make use of this network of waterways, especially those carrying freight. In addition Germany has large railroad systems.

Berlin is the capital and chief railroad center. *Leipzig* is a fur market and book publishing center. *Dresden* and *Munich* are famous for their picture galleries; and *Cologne* for its cathedral and the manufacture of perfumery.

Review of Sections 205 to 209.—1. What change of government in Germany followed the World War? 2. Describe the size and boundaries of Germany. 3. Describe the surface of the country.

4. Where are the agricultural regions? 5. What are the important crops? 6. How has the upper Rhine valley been fitted for agriculture? 7. What is grown there? 8. Where are the grazing regions? 9. Why must Germany import food?

10. How are the forests of Germany cared for? 11. What mineral deposits are found in Germany?

12. What crops are used for the manufacture of flour? 13. How does Germany rank in the manufacture of beet sugar? 14. What are some of the other important manufactures?

15. What was the effect of the World War on the commerce of Germany? 16. What three cities are important seaports and shipbuilding centers? 17. How may Baltic ports be reached from the North Sea? 18. What large rivers rise in the southern mountains (Fig. 306)? 19. How have the rivers been made useful in commerce? 20. Where is Berlin? 21. For what is Leipzig noted? Dresden? Cologne?

Fig. 318. Fish market in a German city

Fig. 319. Stacks of flax in Belgium. The stalk of the plant contains the fiber used in making linen

Fig. 321. Canal in a Dutch city. Narrow streets border the canal, but most of the transportation is by water

OTHER COUNTRIES ON THE NORTH AND BALTIC SEAS

210. Belgium.—Belgium is about as large as Maryland, but has five or six times as many people. The southeastern part is hilly, and has well-kept forests and mines of coal, zinc, iron, and lead. Northern Belgium is a lowland. Part of it is so low that high banks, called *dikes*, have been built to keep out the sea.

Belgium is a country of small farms, especially in the northern lowlands. The chief crops are grain, flax, hops, sugar beets, and vegetables. Sheep and horses are raised among the southeastern hills.

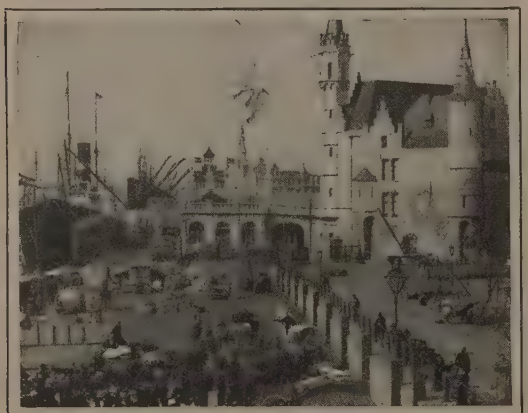

Fig. 320. Shipping on the Scheldt River at Antwerp

On account of the coal and iron mines, southern Belgium has become one of the busiest iron-manufacturing regions in Europe. Belgium is famous also for its linens, laces, carpets, and woolen and cotton cloths. Much of the flax used in the linen and lace is home grown, but all the cotton and most of the wool are imported. The Belgians have long been leaders in the making of woolen goods.

Brussels, the capital and largest city, manufactures lace, linen, and carpets. *Antwerp* is the chief seaport and one of the great ports of Europe (Fig. 320). *Liége* makes woolen and steel goods.

Belgium has a large colony in the Congo district of Africa.

211. The Netherlands.—The name Netherlands means lowlands and is therefore a good name for the low country north of Belgium and west of Germany (Fig. 306). This country is often called Holland, which is really the name of one of its provinces. The people are called Hollanders or Dutch. A part of the country is in the Rhine delta, and much of it lies below the level of the sea. Here, as in northern Belgium, dikes have been built to keep the sea and rivers from flooding the land.

Fig. 322. Shipping in the harbor of Rotterdam

Fig. 323. An Amsterdam diamond cutter

The water that gathers on the lowlands behind the dikes is pumped out by windmills into the canals which cross nearly all parts of the country. The people use the canals instead of roads, traveling and carrying their produce to market in boats. In some of the cities there are canals through the principal streets (Fig. 321). In the winter the canals freeze over and are used for skating and sleighing.

212. Industries of the Netherlands.—The leading industries are agriculture and dairying. The small farms are so carefully tended that they look like well-kept gardens. The cattle also are given the best of care. Butter and cheese are made in large quantities and sent to other countries for sale. The crops are like those of Belgium. The Dutch farmers grow also many flowers and flower bulbs for foreign markets.

The Dutch have large possessions in the East Indies (islands near Asia), small islands in the West Indies, and part of Guiana in South America. The city of New York was founded and the Hudson Valley was explored and settled by the Dutch. Later this region became an English colony and finally a part of the United States.

The capital of the Netherlands is *the Hague*. *Rotterdam* is one of the chief seaports of Europe (Fig. 322). The largest city of the Netherlands is *Amsterdam*. Here live and work the most skillful diamond cutters in the world. When found, most diamonds look like small round pebbles. Cut diamonds glisten brilliantly as the light strikes them. Stones from many diamond mines are sent to Amsterdam to be cut (Fig. 323).

Review of Sections 210 to 212.—1. Which part of the Belgium country is hilly? 2. Where is the lowland? 3. How are lands below sea level protected from the sea? 4. What are the chief industries? 5. Where is each carried on? 6. What are the most important manufactures? 7. Where is the raw material obtained? 8. Name the chief cities of Belgium.

9. What does the name Netherlands mean? 10. Why are the people called Hollanders? 11. What river delta forms a part of this country? Of what use are dikes? 12. How are the lowlands drained? 13. Of what use are the canals?

14. What are the leading industries of the Netherlands? 15. What products are exported? 16. What city is the capital? 17. Which city is the largest? 18. Which is the chief port?

Fig. 324. Young women at work decorating beautiful Danish pottery, Copenhagen

213. Denmark.—Denmark occupies a small peninsula between the North and Baltic seas, and the islands east of the peninsula (Fig. 306). It is a lowland, larger than the Netherlands, but has only half as many people.

Much of the soil of Denmark is sandy or swampy, and the climate is too cool for many crops. Oats, barley, rye, and vegetables are grown; but the leading industries are dairying and the raising of poultry, sheep, horses, and hogs. Butter is made in large quantities, and much of it is sent to London and to other cities of Great Britain. Part of the food given to the cattle in Denmark and other west European countries is cottonseed meal from the United States.

There is some manufacturing, including the making of leather and fine decorated pottery (Fig. 324).

The capital, *Copenhagen*, is the largest city and chief port.

The Danish possessions include Greenland (Sec. 176) and the Faroe Islands in the north Atlantic. Between them is Iceland, with a government of its own, under the Danish king.

214. Norway and Sweden.—Norway and Sweden are two independent kingdoms occupying the Scandinavian Peninsula. This is the largest peninsula of Europe. It is more than twice as large as Great Britain, although Great Britain has nearly six times as many people as Norway and Sweden combined.

Much of the Scandinavian Peninsula is mountainous. Farming is possible only in the eastern and southern parts. The chief crops are hay and the grains and vegetables that will grow in cool countries.

In the highlands sheep, cattle, and goats are raised. Much butter and cheese are made. Many of the mountain slopes are covered with forests, and both Norway and Sweden produce lumber, wood pulp, and paper for export (Fig. 325).

Norway stretches along the western side and around the northern end of the peninsula. Long fiords, or narrow arms of the sea bordered by steep rocky walls (Fig. 326), reach inland among the mountains. It is easier for the people living near these fiords to go from place to place by sea, than to cross the rugged land.

Fig. 325. Logs to be used in paper making, Norway

Fig. 326. A steamer in one of the Norwegian fiords

For this reason the Scandinavians have always been devoted to a life on the sea. A thousand years ago the *Norsemen*, as they were called, were the most famous and daring sailors and sea rovers in the world. At the present time many of the Scandinavians are fishermen, and fish supply a large part of their food. Many are sailors, both on their own ships and on those of other nations. Vessels owned and manned by Scandinavians are engaged in the business of carrying goods to and from all the great ports of the world.

One of the most beautiful ocean trips in the world is in and out among the fiords of Norway (Fig. 326) and along its coast. At the heads of many of the northern fiords great glaciers may be seen, although they are not so large as those in the fiords of Alaska. The North Cape is so far north that for several weeks during the summer the sun does not set there even at midnight. For this reason the northern part of Norway is called the "land of the midnight sun."

In northern Sweden there are large forests and valuable deposits of iron ore. The steel made from this ore has long been famous for its excellent quality. In southern Sweden agriculture is the leading industry and the farms are well cultivated. There is no coal in Norway and Sweden, but the power furnished by the mountain streams is used, and much manufacturing is done.

215. Cities.—Most of the people live in the southern part of the peninsula, and all of the large cities are there. *Stockholm* is the capital and largest city of Sweden. *Goteborg* is the most important port. *Oslo*, formerly called Christiania, is the capital and largest city of Norway. *Bergen* is its chief port and the headquarters of a large fishing fleet.

Review of Sections 213 to 215.—1. Where is Denmark? 2. How does it compare in size and population with the Netherlands? 3. What are the industries? 4. What are the exports? 5. Where is one export sent? 6. What food is used for the cattle? 7. Where is Copenhagen? 8. What outlying possessions has Denmark?

9. In what peninsula are Norway and Sweden? 10. How does the peninsula compare in size and population with Great Britain? 11. What parts of it are suitable for farming? 12. What crops can be grown? 13. Where are the grazing regions? 14. What part of the peninsula is covered with forests? 15. Where is Norway? 16. Describe its coast. 17. What occupations do the people follow on the sea?

18. Where is the North Cape? 19. Why is it interesting to visit this cape in midsummer?

20. Where do most of the Scandinavian people live? 21. Where is Stockholm? Goteborg? Oslo? Bergen?

216. Poland.—Poland is made up of lands until recently ruled by Germany, Austria, and Russia. Its area is greater than that of our state of Colorado, and its population is many times as great. In the west its boundaries are so fixed that Poland separates a small part of northeastern Germany from the main body of that country (Fig. 306). The eastern boundary was established by treaty with Russia after a war in 1920.

Fig. 328. One of the principal streets of Warsaw

Poland is mainly an agricultural country (Fig. 327); the chief crops are rye, oats, wheat, potatoes, and sugar beets. Horses, cattle, and sheep are raised. The mineral wealth of the country includes rich deposits of coal, iron, zinc, and salt. Among the manufactures are textiles, leather, and iron and steel goods.

The Vistula is the most important river highway. On its banks is *Warsaw*, the capital and chief railroad center (Fig. 328). It has tanneries, sugar refineries, and other factories. The great cotton mills are at *Lodz*. Raw cotton used there is imported from the United States.

Danzig, an independent city near the mouth of the Vistula, is the chief port for trade with Poland.

Fig. 327. At work on a Polish farm

217. Lithuania, Latvia, and Esthonia.—These three countries border the eastern shore of the Baltic Sea. The area of this region is six times that of Belgium and about equal to that of our state of Washington. The entire region is low and flat and a considerable part is marshland. The leading industries throughout the district are farming, lumbering, and fishing. *Riga* is the chief port.

Review of Sections 216 and 217.—1. What country does Poland divide into two parts? 2. What is the chief industry of Poland? 3. What crops are raised? 4. What minerals are found? 5. What are the leading manufactures? 6. Why is the Vistula River important to the Polish people? 7. What are the industries of Warsaw? 8. What is manufactured at Lodz and where does the raw material come from? 9. Through what independent city is Polish sea trade carried on?

10. What countries border the eastern shore of the Baltic Sea? 11. What are the leading industries? 12. What city is the chief port of this region?

FRANCE

218. Position and Surface.—The European country nearest to Great Britain is the republic of France. By what strait and channel are these countries separated (Fig. 306)? From these waters France stretches across the mainland of Europe to the Mediterranean Sea. The south and east boundaries are formed partly by mountain ranges.

The central plateau west of the river Rhone is the only large highland in the interior. The valley between the plateau and the Alps is drained into the Mediterranean Sea. Nearly all the rest of France slopes toward the west and northwest and is drained by several large rivers.

219. Agriculture.—As France has a mild climate and abundant rain, large crops are easily grown on the lowlands and in the valleys. Wheat is the chief grain raised (Fig. 329), but oats, barley, and rye also are grown. Potatoes and sugar beets are produced in many parts of the country.

In the cultivation of wine grapes France leads the world. The finest vineyards are in the Garonne and Rhone valleys and in the upper parts of the Seine, Saone, and Rhine valleys. Southern France also produces oranges and olives.

One of the principal industries of southern France is the care of the silkworm. This little caterpillar is fed on the leaves of the mulberry tree until it is old enough to spin its cocoon.

Cattle, sheep, and horses are raised in large numbers, and butter and cheese are exported. Several kinds of French cheese are widely known for their delicate flavors.

220. Forests and Mines.—The French tend their forests with great care. Trees to be cut down are carefully chosen. Twigs and branches are not allowed to lie on the ground. Many trees have been planted in districts where the soil is too poor for cultivation or for pasture.

France has always had some coal and iron, but in the territory recovered from Germany after the World War (Fig. 307) there is much more of both these important minerals. Potash, a valuable mineral fertilizer, is also found in this territory near the river Rhine.

Fig. 329. Cutting wheat in southeastern France

Fig. 330. Weaving silk ribbons in a Lyon factory, France

221. Manufacturing.—Of all the French manufactures the most important are the textiles, or cloth and other woven goods. A part of the linen, silk, and wool used in them are produced in France, but all of the cotton is imported.

French textiles are of fine quality and the silks are especially famous. *Lyon*, in the valley of the Rhone, is the center of the silk manufacturing industry (Fig. 330); and *St. Etienne*, near Lyon, makes silk ribbons. There are large cotton and woolen mills in northeastern France and in the Rhine Valley. Other French manufactures include iron and steel goods, wine, sugar, gloves, shoes, artistic jewelry, and other articles prized for their superior quality.

222. Commerce and Cities.—Among the imports of France are coal, cotton, wool, raw silk, and meat, wheat, and other foods. The chief exports are a great variety of textiles, fine jewelry, and other artistic products, and much wine.

Marseille is the largest seaport, and controls the trade with other countries on the Mediterranean Sea. *Bordeaux*, on the Garonne, is the chief port for the shipment of wines. *Calais* is the French port for the steamers that run between northeastern France and Dover in southern England.

Fig. 331. One of the bridges across the Seine at Paris

The most beautiful city of France and one of the most beautiful in the world is *Paris* (Fig. 331). It is the capital of France and the third city of the Old World in population. Its avenues are broad and handsome, well shaded, and brilliantly lighted at night. There are many fine public buildings and large art galleries with famous paintings and statues. To this city many students of music, painting, and architecture go to study. Paris has a variety of manufactures and carries on an extensive commerce through its seaport, *Havre*. Small boats come up the Seine from the ocean and receive or unload their cargoes within the city limits.

Although for many centuries a monarchy, France has now been for some time a republic. It has colonies in Asia, several large colonies in Africa, one in South America (Sec. 192), and it owns many islands.

Fig. 332. A fine mountain road across the Pyrenees

Review of Sections 218 to 222.—1. Where is France? 2. What parts of its boundary are mountain ranges? 3. Into what waters do its rivers flow?

4. Why are large crops easily grown in France? 5. What grains are raised? 6. Where is grape culture carried on? 7. Where are silkworms raised? 8. Describe this industry. 9. On what are the worms fed?

10. What care do the French people give their forests?

11. What are the leading manufactures? 12. What cities are the leading silk-manufacturing centers? 13. Where are the cotton and woolen mills?

14. What are the chief imports? Exports? 15. What cities are important ports? 16. On what waters are they located? 17. Where is Paris? 18. For what is the city noted? 19. What is the present government of France? 20. What other countries have this form of government? 21. Where are the French colonies?

SPAIN AND PORTUGAL

223. Surface.—The two countries of the Iberian Peninsula are Spain and Portugal (Figs. 304, 306). They are independent of each other, but are alike in climate and industries. Spain is five and one half times as large as its smaller neighbor. Much of the peninsula is a high and rugged plateau. It is bordered on the north by the Pyrenees (Fig. 332), and is crossed by other ranges.

224. Grazing and Agriculture.—The plateau is so high that it is cool in spite of its southern position, and the winds that reach the interior bring but little rain. Some wheat and other grains are grown, but much of the plateau is unfit for agriculture. The raising of cattle and sheep is the leading industry.

Along parts of the coast and in the valleys of some of the rivers there are small lowlands whose climate is mild. These are the chief agricultural districts. On the west coast during the winter the west winds bring enough rain for the growth of crops. In the east it is necessary to irrigate the fields.

In the warm valleys and lowlands, grapes, olives, oranges, and other tropical fruits are raised. Another product of southern Spain and Portugal is cork, which is the bark of a kind of oak tree (Fig. 333). It is stripped off in large sheets and used in making corks for bottles and in filling life preservers.

Fig. 333. Donkeys loaded with cork bark, Spain

Fig. 334. A wharf at Barcelona

225. Mining, Manufactures, and Commerce.—There are large deposits of important minerals, including iron, copper, lead, zinc, and quicksilver. There is not much coal in either Spain or Portugal, and the people are lacking in enterprise. For these reasons most of the ore is sent to Great Britain and Germany for smelting and manufacture.

There are textile mills in *Barcelona* in northeastern Spain, but in most parts of the peninsula there is little manufacturing. This is partly because of the small supply of coal. As there are few important manufactures, the leading exports are ores, cork, fruit, and wine. *Barcelona* (Fig. 334) and *Valencia* are the chief ports of Spain. The seaports of Portugal are *Oporto* (Fig. 335) and *Lisbon*, the capital.

Madrid is the capital and the largest city of Spain. It is near the center of the high plateau and is surrounded by a barren country.

226. People and History.—Spain and Portugal were at one time among the leading nations of the world. They led in the exploration and settlement of new countries and had many colonies. It was a Spanish expedition that Columbus commanded when he discovered the New World. It was also by expeditions from Spain and Portugal that South America and the southern part of North America were explored and settled. Spain was cruel in the government of its colonies, and finally they rebelled and obtained their freedom. Portugal also lost her great American colony, Brazil. At present both Spain and Portugal have colonies in Africa.

Fig. 335. The harbor of Oporto, Portugal

In 1910 the people of Portugal forced the king to leave the country, and set up a republic. Spain is a monarchy.

At the southern end of Spain, not far from the northern coast of Africa, is the famous mountain known as the Rock of Gibraltar. This rock is owned by Great Britain. Rooms and passageways have been cut in it, and great cannon placed in them, making a powerful fortress. Thus the British can control the movement of ships between the Atlantic Ocean and the Mediterranean Sea.

Review of Sections 223 to 226.—1. In which peninsula of Europe are Spain and Portugal? 2. How do they compare in size? 3. Describe the surface of the peninsula.

4. What effect has the elevation of the peninsula on the temperature? 5. Compare the rainfall of the Iberian Peninsula with that of France. 6. What industries are carried on? 7. Where is irrigation necessary? 8. What tree grown in the southern part of the peninsula has an especially valuable bark? 9. What minerals are found? 10. Where is the ore sent for manufacture?

11. Where is Barcelona? 12. What industries are carried on there? 13. What are the exports of Spain? 14. What cities are important ports? 15. Where are they? 16. Where is the capital of Spain?

17. Where did Spain and Portugal at one time have colonies? 18. From which of these countries did Columbus sail when he discovered America? 19. What has become of the colonies that Spain once had? 20. What change did Portugal make in 1910 in the form of government?

21. Where is Gibraltar? 22. By what country is this rock owned? 23. Why is it important?

SWITZERLAND

227. Position and Surface.—Switzerland is a country of the central Alps. How many countries border it (Fig. 306)? As it is shut in on all sides by other countries, it has no seacoast. It is about half as large as Maine, but has five times as many people.

Much of its surface is occupied by the high, snow-clad Alps in the south, and the lower ranges of the Jura along the northwestern border. Between these two high mountain masses is a narrow, hilly plateau with several beautiful lakes. This plateau is the most densely settled part of the country.

228. Climate.—Switzerland is cooler than the surrounding countries because of its greater elevation. The west winds from the Atlantic Ocean blow across the land. During the winter there is much snow. In summer rain falls abundantly on the lower mountain slopes and on the plateau.

229. Grazing and Agriculture.—There is excellent pasture on many of the mountain slopes and in the higher mountain valleys. When the winter has passed and the snows begin to melt, the cattle are driven into the upper mountains, from one pasture to another. They feed in each pasture as long as the grass lasts or until a higher pasture is free from snow. As winter again comes on, they are driven back to the lower pastures, one after another, and finally to the home buildings, where they are kept during the cold winter months. During the summer the grass that can be saved is cut and carried to the barns for winter use (Fig. 336).

Fig. 336. Making hay in Switzerland

Fig. 337. A watch factory in Switzerland

The house and the barn are generally under one roof. Such buildings are made of wood, with wide overhanging eaves. Great stones are sometimes placed on the roofs to keep them from blowing away when strong winds sweep through the mountain valleys.

The chief industry in the mountain valleys is the making of butter and cheese. On the plateau and on some sunny mountain slopes the farmers raise grain, grapes, and vegetables. Other, more rugged mountain slopes are covered with forests.

230. Manufacturing.—There is not much coal in Switzerland, and the Swiss depend on their rapid streams and waterfalls for the power necessary to run mills and factories. The Swiss manufactures are valuable because of their fine workmanship rather than because of the amount of material used. They include toys, clocks, and carved woodwork; jewelry, fine watches, lace, linen, silk, and embroideries (Fig. 337).

Carved woodwork and toys are made by the mountaineers during the winter. Many other articles also are made in the homes of the people. The three manufacturing centers are *Zurich* and *Basel* (Fig. 338), noted for their silks, and *Geneva*, famous for its watches.

As Switzerland has no seacoast, commerce is carried on by rail (Sec. 195).

231. Language and Government.—Nearly all mountain people are brave and fearless. The Swiss have long been free and independent because they have fought for their freedom when necessary. For many years Switzerland has been a republic. *Bern* is the capital.

There is no Swiss language. Many of the people near Germany and Austria speak German, others near France speak French, and a few near Italy speak Italian.

Fig. 338. Basel, on the Rhine River, Switzerland

232. Tourists and People.—The wonderful snow-clad mountains, the beautiful valleys, and the great glaciers attract tourists from all parts of the world. Every summer thousands of people go to Switzerland for a vacation. Providing for these tourists furnishes employment for many of the Swiss people. The dress of the Swiss mountaineers is picturesque. It is quite different from that which we usually see. There is good reason for this. People who live in mountainous countries must wear clothing that is suitable for mountain climbing. It must be strong, and loose, especially at the knees. Besides such clothing the Swiss mountaineers usually wear hats with some kind of bright-colored ornament.

Fig. 339. Harvesting wheat in the Po Valley

Review of Sections 227 to 232.—1. Where is Switzerland? 2. Which parts of its surface are most mountainous? 3. What part is a plateau? 4. Tell about the climate of Switzerland. 5. For what are the mountain valleys used? 6. What is done with the grass that can be cut? 7. What are the chief products of this part of Switzerland? 8. Where is the agricultural section? 9. What are the leading manufactures of Switzerland? 10. What power is used? 11. How is trade carried on between Switzerland and lands across the mountains? 12. What form of government has Switzerland? 13. What languages are used? 14. Why is this country visited by many tourists?

ITALY

233. Position and Surface.—Italy occupies the central one of the three southern peninsulas of Europe. It is a long, narrow country, shaped much like a boot with a wide top (Figs. 306, 307). At the toe of the boot is the island of Sicily, and west of the peninsula is the island of Sardinia. Both islands belong to Italy.

The Alps border the peninsula on the north and on the northwest. Near Genoa they unite with the Apennines, which continue southeast through the entire length of the peninsula.

As the Apennines are high and broad, the eastern and western coast plains are narrow. There are fertile valleys among the mountains, and small lowlands along the rivers. The largest lowland of Italy is the valley of the river Po, in the northern part of the peninsula, between the Alps and the Apennines.

234. Agriculture.—The climate of Italy is mild, but the summer rainfall is not enough for crops, and the land must be irrigated. In parts of the Po Valley, with the aid of irrigation, two or more crops are raised each year. The principal products of this valley are wheat, corn, rice, and vegetables. Here also are large groves of mulberry trees, and Italy outranks France in the production of raw silk.

Fig. 340. Carrara marble quarry

Around the Gulf of Genoa, and in the warm southern valleys and coast plains, oranges, lemons, grapes, and olives are grown.

235. Other Industries.—There is little mining in Italy, though some sulphur is found on the island of Sicily. A fine quality of white marble is quarried near *Carrara* in the northern part of the peninsula (Fig. 340).

The manufactures of Italy are not extensive, but they are developing rapidly. Silk and cotton goods, lace, and gloves are among the most important. Most of the raw cotton is imported from the United States. Wine and olive oil are made in large quantities.

Fishing is an important industry, especially along the eastern coast.

236. The City of Rome. *Rome*, the capital of the kingdom, was at one time the center of an empire that controlled a large part of the world then known. This was nearly two thousand years ago, and most of the splendid buildings of that time have been destroyed. We may, however, get some idea of their beauty from the ruins that are still left. About the Forum, or ancient market place, are remains of its old temples and other public buildings (Fig. 341). Near the Forum may still be seen the ruins of the Colosseum, an immense building with seats for 80,000, where the people of ancient Rome gathered to see men and animals fight.

The Pope, the head of the Roman Catholic Church, lives in Rome in the palace called the Vatican. Connected with the Vatican is the great church of St. Peter's.

237. Other Cities. *Naples* is the largest city of Italy, and an important seaport. It lies on a beautiful bay in the southwestern part of the country. Near it is Mount Vesuvius, a volcano that is still active. Another active volcano, Etna, is on the island of Sicily, and a third, Stromboli, is on a small island between them.

Fig. 341. The Roman Forum, with ruins of ancient buildings

Fig. 342. Public square in Florence

Fig. 343. A landing place for boats, in Venice

Florence (Fig. 342) has large picture galleries, in which have been gathered the paintings and statues made by many Italians and other great artists. It is the center of a large region where grapes are raised and used for making wine. *Genoa*, the chief seaport of Italy, was the birthplace of Christopher Columbus. Here are shipyards and cotton mills.

One of the most interesting of the Italian cities is *Venice*, built on a group of islands near the head of the Adriatic Sea. It has narrow, winding footpaths, but no broad streets such as we usually find in cities. People commonly travel, and goods are carried, in boats, on canals which take the place of streets (Fig. 343). Not far from Venice are *Trieste* and *Fiume*, other ports on the Adriatic.

Milan and *Turin* are manufacturing cities in the valley of the Po.

Review of Sections 233 to 237.—1. Where is Italy? 2. What is its shape? 3. What two islands near Italy belong to it? 4. By what mountains is the northern part of the peninsula bordered? 5. What mountains occupy the central part? 6. Where are the lowlands? 7. Describe the climate of Italy. 8. Why must irrigation be used in growing crops? 9. What are the principal crops of the Po Valley? 10. Where are tropical fruits grown?

11. What stone comes from the Carrara quarries? 12. What manufactures are carried on in Italy?

13. What famous ruins are in Rome? Name two great buildings now in use. 14. What two cities are important seaports? 15. Where are they? 16. For what is Florence noted? 17. Why is Venice interesting? 18. What two manufacturing cities are in the Po Valley?

AUSTRIA, HUNGARY, AND CZECHOSLOVAKIA

238. Austria.—Northeast of Italy is Austria. Before the World War, the emperor of Austria was also king of Hungary, and the "dual monarchy" of Austria-Hungary was one of the largest countries in Europe. In 1918 the emperor-king was deposed and Austria-Hungary was broken into pieces. (Fig. 307.)

The new republic of Austria is much smaller than the old Austria, and has a population about one fourth as large. Most of the people are Germans.

Austria is largely a region of mountains with some fertile valleys, especially along the Danube River. There are forests and pasture lands on the mountain slopes, and in the more level agricultural regions grain, potatoes, grapes, and other crops are grown. The chief mineral deposits are coal, iron, and salt, and there are some manufactures.

Vienna, the capital, is an art and music center. It is one of the large cities of Europe.

Fig. 344. Public square, Vienna

239. Hungary. — After the World War parts of Hungary were added to countries on the north, east, and south. The region that is now called Hungary is inhabited chiefly by Hungarians. It is less than one third the size and has less than one half the population of Hungary as it was before the war.

Most of the country is a plain, and the chief industries are agriculture, grazing, and forestry. The leading crops are wheat and corn, but much rye, barley, and oats are also grown. Cattle, sheep, hogs, and horses are raised (Fig. 345).

Fig. 345. Hungarian shepherd with sheepskin coat

The Danube River is a trade route of great importance for Hungary as for Austria. As the map (Fig. 306) shows, neither of these countries has any seacoast.

Budapest, the capital, is on the Danube. It is the chief trade center, and manufactures flour and other agricultural products and agricultural machinery.

240. Czechoslovakia.—North of Austria and Hungary is the republic of Czechoslovakia. The country gets its name from the fact that most of its people are either Czechs or Slovaks. These two groups of people speak languages that are much alike. Until 1918 nearly all of Czechoslovakia formed a part of the old Austria-Hungary. On the north and west it is separated from Poland and Germany by bordering mountains. Its western part, Bohemia, is a low plateau that slopes from the south toward the north. Its eastern part is on the southern slope of the Carpathian Mountains.

241. The Industries of Czechoslovakia.—Czechoslovakia is a country of abundant natural resources and of great industries. The plains and river valleys are agricultural regions of unusual fertility. The mountain districts are rich in a variety of minerals, and their slopes are covered with extensive forests of oak and pine. The cities are centers of trade and manufacture.

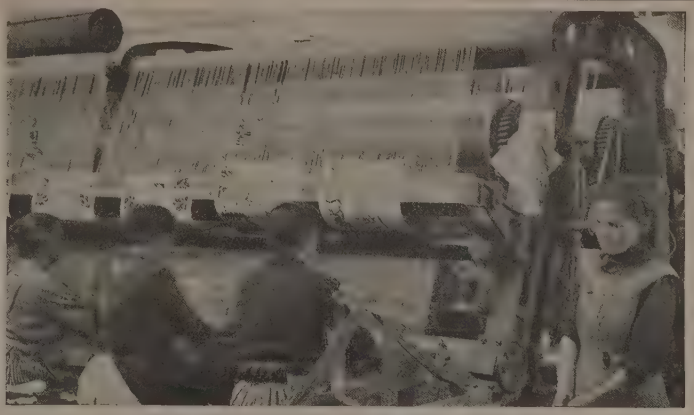

Fig. 346. Modern rug weaving in Bohemia

The principal crops are corn, oats, rye, barley, sugar beets, potatoes, and flax. Wheat is raised, but not so extensively as in Hungary.

Of the minerals coal and iron are the most important, although almost every useful metal and mineral is found. Some of the most famous mineral springs of the world are found in the western part of the country.

The leading manufactures include textiles (Fig. 346), iron and steel goods, glassware, sugar, and beer. *Prague*, the capital, is the chief manufacturing city and trade center of the country (Fig. 347).

Czechoslovakia, like Austria and Hungary, has no seacoast. Its trade with other countries must be carried on by rail or on such navigable rivers as the Elbe and Danube.

Fig. 347. Bridge in Prague

Review of Sections 238 to 241.—1. When was Austria-Hungary broken up? 2. How does modern Austria compare in size and population with Austria before the war? 3. Where are the forests and pasture lands of Austria? 4. What are the chief crops? 5. Name the capital.

6. To what countries did Hungary lose territory as a result of the World War? 7. What are the chief Hungarian industries? 8. What river is an important trade route? 9. What are the manufacturing industries of Budapest?

10. How is Czechoslovakia separated from Germany and Poland? 11. What part of the country is mountainous? 12. Where are the agricultural regions? 13. What are the principal crops? 14. What are the two most important minerals? 15. What are the leading manufactures? 16. What is the chief manufacturing city?

Fig. 348. Farm yard in eastern Yugoslavia. The wagons are usually drawn by cattle instead of horses

THE BALKAN COUNTRIES

242. The Balkan Peninsula. — The Turks, coming to Europe from Asia, gained control of the Balkan Peninsula several hundred years ago. Their rule was cruel, however, and in different parts of the peninsula the people rebelled from time to time and set up independent governments. All of the Balkan countries took part in the World War. (Fig. 307.)

Much of the peninsula is mountainous, but there are some lowlands in the northern and eastern parts. Agriculture is the chief industry, but it has been interrupted by wars, and the people have little farming machinery. Many cattle, sheep, and hogs are raised.

243. Yugoslavia.—South of Austria and Hungary is the kingdom of Yugoslavia, made up of Serbia, Montenegro, and the southern parts of the old Austria-Hungary. Nearly all of the people are farmers (Fig. 348). Corn and other grains are the important crops. Much fruit is raised. Hogs are fattened on the nuts of the forest. Sheep, cattle, and horses also are raised. There are forests of oak, pine, and beech, and timber is an important export. Small coal and iron mines are worked.

Belgrade, on the Danube, is the capital and chief trade center. Much of the foreign trade of Yugoslavia passes through the port of Fiume on the Adriatic Sea.

Fig. 349. Rumanian woman, spinning wool

244. Rumania.—East of Hungary and northeast of Yugoslavia is the kingdom of Rumania. It is bordered by the Black Sea, and most of it lies north of the Danube River. The western part was taken from Austria-Hungary at the close of the World War, and in the east it annexed other territory. (Fig. 307.)

The mountain region of the west is rich in mineral resources, its slopes are forest-covered, and cattle are pastured in the valleys. Coal, gold, and silver are mined. The eastern part is an agricultural region of great fertility. The chief crops are corn and wheat.

In Rumania, as also in other Balkan countries, much spinning and knitting are done by hand (Fig. 349).

Bucharest is the capital.

245. Bulgaria.—The kingdom of Bulgaria is south of Rumania. On what sea does it border (Fig. 306)? In spite of the rough surface of the country, the leading industry is agriculture, which is being constantly improved. Many sheep and cattle are raised. Corn and wheat are grown, and large fields of roses, from which the perfume attar of roses is made. Some raw silk is also produced.

Sofia is the capital.

246. Albania.—In the distribution of territory following the Balkan war of 1912, Albania was made an independent country. It lies between Yugoslavia and the Adriatic Sea.

247. Greece was one of the important lands of the ancient world. Long before the days of Rome's greatness the Greeks had become powerful. In many of their cities they built beautiful temples and set up fine statues. Most of the temples are now in ruins, and many of the statues have been lost or taken to other countries and placed in museums.

The ancient city of *Athens* is the capital of the modern republic (Fig. 350). *Salonica* is the chief city of northern Greece.

Fruits are raised for export, especially small grapes, which are dried and called currants. Some grain also is grown, and sheep and cattle are raised.

248. Turkey.—European Turkey is now limited to a very small region in the eastern part of the Balkan Peninsula. The larger part of the republic of Turkey is in Asia, where its capital, *Angora*, is situated.

Constantinople, the chief city of Turkey, is the largest city of the Balkan Peninsula. It is on the Bosporus, through which passes much commerce between the Black Sea and the Mediterranean.

Review of Sections 242 to 248.—1. Where is the Balkan Peninsula? 2. What are the countries of that peninsula? 3. By what people was this region once governed?

4. What are the leading industries of Yugoslavia? Of Rumania? Of Bulgaria? 5. What country makes attar of roses? 6. Where is Bucharest? Belgrade? Sofia?

7. What is left to remind us of the glory of ancient Greece? 8. What city is the capital of Greece? What are the industries?

9. Where is European Turkey? 10. Where is Constantinople? 11. Why is it important?

Fig. 350. A palace in Athens

Fig. 351. "Breaking" flax, Russia. The fiber is afterwards spun and woven into cloth

EASTERN EUROPE

249. Russia.—Russia in Europe is only a part of the great territory held by the Russian people. It is, however, more densely populated than the Russian possessions in Asia, and is therefore far more important. It is larger than any other country in Europe, and has a larger population.

250. Surface.—Most of Russia in Europe is a great plain (Fig. 304), but there are two regions of elevation, known as the Valdai Hills and the Ural Mountains. The Valdai Hills are in the western part of the country, and are only a little higher than the surrounding plain. Here several of the large Russian rivers have their sources. The Ural Mountains form a part of the eastern boundary.

251. Grazing, Agriculture, and Lumbering.—Russia extends so far north and south, and most of it is so distant from the sea, that it has a great variety of climate.

In the southeast it is so dry that agriculture is not possible without irrigation, and grazing is the important industry. This is the region of the *steppes*, or dry grasslands.

In the far north the plains, called *tundras*, are frozen to a great depth, but the surface thaws in summer. The tundras are covered with moss, which furnishes food for the reindeer, the domestic animal of northern Russia. The reindeer draw loads as horses do in our country, and furnish flesh for food and skins to be made into clothing.

South of the tundras there is a great forest belt, where the lumber industry is carried on.

South of the forest there is more rain. Among the largest crops raised are wheat, rye, and oats. Other leading crops are flax, hemp, and potatoes.

252. Mining and Manufacture.—Mining is one of the important Russian industries. The Ural mountain region yields gold and platinum, which is a whitish metal more valuable than gold. Russia and Colombia (Sec. 192) are the leading countries in the production of platinum. Some coal and iron are mined, but the oil fields near Baku produce so much petroleum that it is used largely as a fuel in place of coal.

There are few factories in Russia for so large a country, but the people make many things in their homes (Fig. 351).

253. Commerce and Cities.—Russia has an extensive railroad system and many navigable rivers. A vast amount of freight is carried by water. Most of the sea-borne trade passes through the ports of *Leningrad*, formerly named Petrograd, and Riga on the Baltic Sea, and *Odessa* and *Sebastopol* on the Black Sea.

As the harbors of the Baltic are frozen during several months in the year, they can be kept open only by iron boats that crush the ice. For this reason the Black Sea ports are better. In order to reach the ocean, ships from Baltic and Black Sea ports must pass through waters controlled by other nations. As the Russian people did not like this, they built the port of *Archangel* on the White Sea, but its harbor is frozen during half of the year. Later they built *Murmansk*, a port on the open Arctic Ocean.

Moscow, the capital, is the oldest city of Russia. It is noted for its many great churches. It is an important manufacturing and railroad center.

254. Government.—For centuries the government of Russia was harsh and cruel. The poorer people of the farming districts were practically slaves. About sixty years ago they were freed and allowed to own land. Still later, the people were allowed to elect representatives to help in making laws. During the World War the Russian emperor, or Czar, was deposed, and civil war began between different Russian parties. Most of the country soon fell under the control of the extreme radical party.

255. Ukraine.—The southern part of Russia, called the Ukraine, was conquered by the radicals in 1920. It is a very fertile agricultural region and raises immense crops of wheat and corn. It has also coal and iron mines, and the great cities of *Kief* and *Odessa*. Odessa exports wheat (Fig. 352) and manufactures much flour.

256. Finland.—After a hundred years of Russian rule, Finland became independent in 1917. It is a cold country, but fine forests furnish much timber for export. Agriculture, dairy farming, and fishing give employment to most of the people. *Helsingfors*, a port on the Gulf of Finland, is the capital and chief city.

Review of Sections 249 to 256.—1. Where is Russia? 2. How does Russia in Europe compare in size with the other countries of Europe? 3. Why do the different parts of Russia have such different climates?

4. What region is given up to grazing? 5. What are the tundras? 6. In what part of Russia are the wheat fields? 7. What other crops are grown?

8. What metals are found in Russia? 9. What is much used for fuel? 10. How is the internal commerce carried on? 11. Through what ports is Russian trade carried on? 12. Why did the Russians build a port on the White Sea?

13. Name and describe the capital of Russia.

14. What changes have recently been made in the government of Russia?

15. What is the Ukraine? 16. What business is carried on at Odessa?

17. Where is Finland? 18. What are the principal industries of Finland?

Fig. 352. The harbor of Odessa

Fig. 353

Relief Map

ASIA

Scale of Statute Miles

0 500 1000

945 MILES TO ONE INCH

Location of land below sea level is shown by arrows
Lowlands are shown in green
Higher lands are shown in yellow or buff
Great elevations are shown in purple
Snow-covered peaks and slopes are uncolored
Other mountain slopes are shaded
Water is shown in blue

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Fig. 354. Suez Canal, near the deepest cut. At the right is a ferryboat crossing the canal

ASIA

THE CONTINENT

257. Size and Position.—Asia is the largest of the continents. It is about twice as large as North America, and more than four times as large as Europe. On the south, one of its peninsulas almost reaches the Equator. At the north, it is bordered by the Arctic Ocean and it extends nearer to the North Pole than the mainland of North America or Europe.

The far northern part of the continent is very cold. During most of the year, ice and snow cover both land and water. Where the coast is low, therefore, it is sometimes impossible to tell where the land ends and the sea begins.

Northeastern Asia is separated from North America by Bering Strait, which is less than forty miles wide. But there is no trade or travel across this narrow strait, because few people live in these cold northern parts of the world.

West of Asia is the continent of Europe. On the southwest the narrow Isthmus of Suez connects Asia with Africa. Across this isthmus a canal has been cut (Fig. 354), to connect the Mediterranean Sea with the Red Sea. On the south and east the continent is bordered by seas and bays that are arms of the Indian and Pacific oceans.

258. Coast Line.—The coast line of Asia is irregular, and some of the seas and bays are almost shut off from the ocean by islands and peninsulas.

The three southern peninsulas of Asia are very large. Name them (Fig. 355). Indo-China is a double peninsula; the narrow southern part of it is called the Malay Peninsula. What sea is west of India? What bay is east?

There are many islands along the eastern and southern coasts of Asia. The most important group is the Japan Islands. What sea separates them from the mainland? The islands between Asia and Australia are called the East Indies. The Philippine Islands belong to the United States (Sec. 168).

Fig. 355
Physical
ASIA
ELEVATIONS IN FEET
OVER 15000
5000 TO 15000
2000 TO 5000
1000 TO 2000
SEA LEVEL TO 1000
LAND BELOW SEA LEVEL
Depths in Fathoms
0 to 100
100 to 1000
1000 to 2000
over 2000
Scale of Statute Miles
500
1000
945 MILES TO ONE INCH
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ARCTIC OCEAN
ATLANTIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
EUROPE
ASIA
AFRICA
Arctic Circle
Tropic of Cancer
Equator
Longitude 80° East from Greenwich
Ural Mountains
Kirghiz Steppe
Altai Mts.
Plateau of Mongolia
Gobi Desert
Plateau of Tibet
Himalaya Mts.
Kuenlun Mts.
Tian Shan
Plateau of Iran
Arabian Peninsula
Arabian Desert
Plateau of Arabia
Deccan Plateau
Peninsula of India
Ganges R.
Taymyr Peninsula
Tundra
Lena R.
Yenisei R.
Ob R.
Volga R.
Dnieper R.
Danube R.
Kolyma Mts.
Verkhoyansk Mts.
Sea of Okhotsk
Bering Sea
Kamchatka Peninsula
Aleutian Is.
Sakhalin I.
Kuril Is.
Hokushu
Honshu
Kiushu
Japan Islands
Sea of Japan
Yellow Sea
East China Sea
South China Sea
Philippine Islands
Luzon
Mindanao
Palawan
Sulu Sea
Celebes Sea
Molukka Is.
New Guinea
Borneo
Celebes
Java
Sumatra
Malay Peninsula
Indo China
Bay of Bengal
Arabian Sea
Ceylon
Laccadive Is.
Maldive Is.
Andaman Is.
Nicobar Is.
Sunda Islands
Timor
Flores
Banda Sea
Aru Is.
Taiwan (Formosa)
Hainan
Lake Baikal
Lake Aral
Lake Balkash
Lake Tsaidam
Lob Nor
Koko Nor
Tarim R.
Amur R.
Hwang Ho R.
Yangtze Kiang R.
Mekong R.
Irrawaddy R.
Salween R.
Brahmaputra R.
Indus R.
Euphrates R.
Tigris R.
Nile R.
Red Sea
Persian Gulf
Gulf of Oman
Gulf of Aden
Gulf of Siam
Gulf of Tonkin
Gulf of Martaban
Gulf of Manar
Palk Strait
Malacca Strait
Sunda Strait
Lombok Strait
Torres Strait
Mt. Everest 29,002
Mt. Godwin Austen 28,250
Mt. Demavend 19,598
Mt. Ararat 16,916
Mt. Sinai 8,571
Mt. Fujiyama 12,370
Mt. Elbrus 18,526
Mt. Blanc 15,781
Mt. Etna 10,840
Mt. Hecla 5,108
Mt. Kenia 18,370
Mt. Kilimanjaro 19,720
Mt. Ruwenzori 16,810
Mt. Cameroon 13,760
Mt. Comorin
C. Chelyuskin
C. Lopatka
C. Negrais
C. Cambodia
C. Romania
C. Kadd
C. Guardafui
Cape Verde Is.
Canary Is.
Azores
Madeira
Bermuda Is.
Sokotra
Nova Zemla
Franz Josef Land
Spitzbergen
Iceland
Jan Mayen I.
Faroe Is.
Shetland Is.
Orkney Is.
Hebrides
Ireland
Great Britain
North Sea
Baltic Sea
Gulf of Bothnia
Gulf of Finland
Gulf of Riga
White Sea
Barents Sea
Kara Sea
Caspian Sea
Black Sea
Sea of Azov
Aral Sea
Mediterranean Sea
Sea of Marmora
Aegean Sea
Crete
Cyprus
Sicily
Corsica
Sardinia
Balearic Is.
Libyan Desert
Nubian Desert
Syrian Desert
Sahara
Taurus Mts.
Caucasus Mts.
Elburz Mts.
Hindu Kush
Pamir Plateau
Suez Canal
Panama Canal
Kiel Canal
Dardanelles
Bosporus
Gibraltar
Strait of Bab-el-Mandeb
Strait of Ormuz
Strait of Malacca
Strait of Makassar
Strait of Magellan
Cape Horn
Cape of Good Hope
Cape Agulhas
Cape Blanco
Cape Bojador
Cape Guardafui
Cape Verde
Cape Hatteras
Cape Cod
Cape Race
Cape Farewell
Cape Wrangell
Cape Barrow
Cape Prince of Wales
Cape Lisburne
Cape Deshnev
Gulf of Anadir
Gulf of Alaska
Gulf of California
Gulf of Mexico
Gulf of St. Lawrence
Hudson Bay
Baffin Bay
Davis Strait
Greenland
Iceland
Alaska
Yukon R.
Mackenzie R.
Great Bear L.
Great Slave L.
Lake Winnipeg
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
Lake Nicaragua
Lake Titicaca
Lake Maracaibo
Lake Chad
Lake Victoria
Lake Tanganyika
Lake Nyasa
Lake Rudolf
Lake Albert
Lake Tchad
Lake Ngami
Lake Eyre
Lake Torrens
Lake Gairdner
Lake Amadeus
Lake Mackay
Lake Frome
Lake Gregory
Lake Disappointment
Lake Barlee
Lake Moore
Lake Austin
Lake Way
Lake Carnegie
Lake Darlot
Lake Ballard
Lake Lefroy
Lake Cowan
Lake Dundas
Lake Rason
Lake Hope
Lake Wells
Lake Raeside
Lake Miranda
Lake Gilmore
Lake Barlee
Lake Moore
Lake Austin
Lake Way
Lake Carnegie
Lake Darlot
Lake Ballard
Lake Lefroy
Lake Cowan
Lake Dundas
Lake Rason
Lake Hope
Lake Wells
Lake Raeside
Lake Miranda
Lake Gilmore

259. Surface and Drainage. — The central part of Asia is a region of high, broad plateaus, crossed and bordered by mountain ranges (Fig. 356). Find the Plateau of Tibet on the map. On the southern edge of this plateau, in northern India, are the Himalaya Mountains. They include the highest ranges in the world, with many high peaks. The highest peak of all is Mt. Everest (Fig. 364), which is about five and one half miles in height.

Fig. 356. Plowing with buffaloes on a farm in Tibet

The Himalayas extend generally east and west, as do most of the chief mountain ranges of Asia and Europe.

The great rivers of Asia rise in the central highlands, or in highlands farther north and east, and flow out across the bordering lowlands to the sea.

The largest of the bordering lowlands is the Siberian Plain, which extends eastward from the central lowland of Europe. Several large rivers flow northward across this plain to the Arctic Ocean. Like the rivers of northern Canada, they flood their valleys in the springtime, when the ice breaks up after the long winter (Sec. 90). There are smaller lowlands along the eastern and southern coasts, in the valleys of the great rivers. Still others border the Caspian Sea and Lake Aral. A part of the region around the Caspian Sea is lower than the level of the ocean. These bodies of water have no outlet and are salt like Great Salt Lake in western United States. Both the interior of Arabia and the southern part of India are high plateaus bordered by ranges of mountains.

Review of Sections 257 to 259. — 1. How does Asia compare in size with the other continents? 2. What peninsula almost reaches the Equator (Fig. 355)? 3. Which one of the continents reaches nearest the North Pole? 4. Why is it sometimes impossible to tell where the northern coast line really is?

5. How far is it across Bering Strait? 6. What two continents are near each other in this region? 7. Why does this fact not make very much difference to the people of the two continents? 8. What isthmus joins Asia to Africa?

9. What sea and bay border Asia on the south? 10. Where is Arabia? India? The Malay Peninsula? Indo-China? 11. Where are the Japan Islands? 12. Where are the East Indies?

13. Where are the high plateaus of Asia? 14. Where are the Himalaya Mountains? Where is Mt. Everest? 15. Why is this a noted peak? 16. Where is the Siberian Plain? 17. In what respect are the rivers that flow north across this lowland like those of northern Canada? 18. Where are the other lowlands of Asia? 19. What is peculiar about the drainage of the region around the Caspian Sea and Lake Aral?

ARCTIC OCEAN
Greenland
Iceland
Spitsbergen
Franz Josef Land
Novaya Zemlya
Nova Zembla
Barents Sea
White Sea
Kara Sea
Laptev Sea
East Siberian Sea
Bering Strait
Bering Sea
Kamchatka
Sea of Okhotsk
Aleutian Islands
Alaska
Arctic Ocean
Atlantic Ocean
North Sea
Baltic Sea
Gulf of Bothnia
Gulf of Finland
Scandinavian Peninsula
Norway
Sweden
Finland
Russian Empire
Moscow
Petrograd
Archangel
Kazan
Orenburg
Perm
Tobolsk
Tyumen
Omsk
Tomsk
Barnaul
Krasnoyarsk
Irkutsk
Semipalatinsk
Yakutsk
Verkhoyansk
Nikolaevsk
Khabarovsk
Blagoveshchensk
Vladivostok
Hakodate
Sakhalin
Kuril Islands
Siberia
Manchuria
Harbin
Kirin
Mukden
Chosen
Empire of Japan
Tokyo
Yokohama
Osaka
Kobe
Nagasaki
Honshu
Hokkaido
Seoul
Jaran
Sea of Japan
Yellow Sea
Kiaochow
Tsingtau
Tientsin
Peking
Inner Mongolia
Outer Mongolia
Mongolia
Gobi Desert
Urga
Urumtsi
Turkestan
Tashkent
Bokhara
Merv
Khiva
Aral Sea
Caspian Sea
Black Sea
Constantinople
Turkey
Asia Minor
Smyrna
Mediterranean Sea
Greece
Athens
Italy
Rome
Venice
Vienna
Berlin
Paris
London
France
Spain
Portugal
Gibraltar
Algeria
Tripoli
Libya
Egypt
Alexandria
Cairo
Nile R.
Libyan Desert
Sahara
Persia
Teheran
Ispahan
Bagdad
Basra
Persian Gulf
Kuwait
Afghanistan
Kabul
Kandahar
Herat
Peshawar
Srinagar
Quetta
Khelat
Kerman
Bushire
Arabia
Mecca
Medina
Jidda
Hejaz
Red Sea
Suez Canal
Aden
Muscat
Oman
Hadramaut
Arabian Sea
Gulf of Aden
Abyssinia
Addis Abeba
Italian Somaliland
Kenya
Uganda
Anglo-Egyptian Sudan
Khartum
Africa
Tanganyika Territory
Zanzibar
Lake Victoria
Lake Tanganyika
Lake Nyasa
Mozambique Channel
Madagascar
Comoro Islands
Mauritius
Reunion
Indian Ocean
British India
Delhi
Agra
Lucknow
Benares
Allahabad
Punakha
Lassa
Tibet
Himalaya Mts.
Nepal
Bhutan
Sikkim
Darjeeling
Calcutta
Chandernagor Fr.
Bombay
Hyderabad
Deccan
Goa
Portuguese
Karikal Fr.
Pondicherry Fr.
Madras
Mahe Fr.
Baroda
Cambay
Gulf of Cambay
Kathiawar
Punjab
Ceylon
Colombo
Laccadive Islands
Maldive Islands
Andaman Is.
Nicobar Is.
Bay of Bengal
Burma
Mandalay
Rangoon
Bassein
Akyab
Arakan
Irrawaddy R.
Salween R.
Siam
Bangkok
Menam R.
Gulf of Siam
Malay Peninsula
Malacca
Singapore
Johore
Federated Malay States
Penang
Achin
Sumatra
Palembang
Billiton
Banka
Borneo
Banjermasin
Java
Java Sea
Samarang
Sunda Islands
Celebes
Celebes Sea
Molucca Passage
Philippine Islands
Luzon
Manila
Mindanao
Sulu Archipelago
Palawan
French Indo-China
Hue
Saigon
Cambodia
Annam
Tonkin
Gulf of Tonkin
Hainan
Hongkong
Canton
Amoy
Foochow
Formosa
Taiwan
China
Republic
Chinese
Nanking
Hankow
Hangchow
Shanghai
Sianfu
Yunnan
Szechwan
East China Sea
South China Sea
Tropic of Cancer
Equator
New Guinea
Arafura Sea
Timor
Flores
Australia
Longitude 80° East from 90° Greenwich
Fig. 357
Political
ASIA
Scale of Statute Miles
0 500 1000
945 MILES TO ONE INCH
Capitals thus: ⊙
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260. Climate and Vegetation.—The lowlands of the southeastern half of Asia are warm. The winds blow from the ocean during the summer, and at that time there are heavy rains. Southwest winds from the Indian Ocean cross India and reach the Himalaya Mountains. On the lower mountain slopes there is much rain, but on the higher slopes the moisture falls as snow. The highest slopes are covered with snow throughout the year. Part of northern India has the heaviest rainfall in the world (Fig. 358). During the winter, the winds blow outward from the center of the continent, in all directions. At this season many parts of the country have little rain.

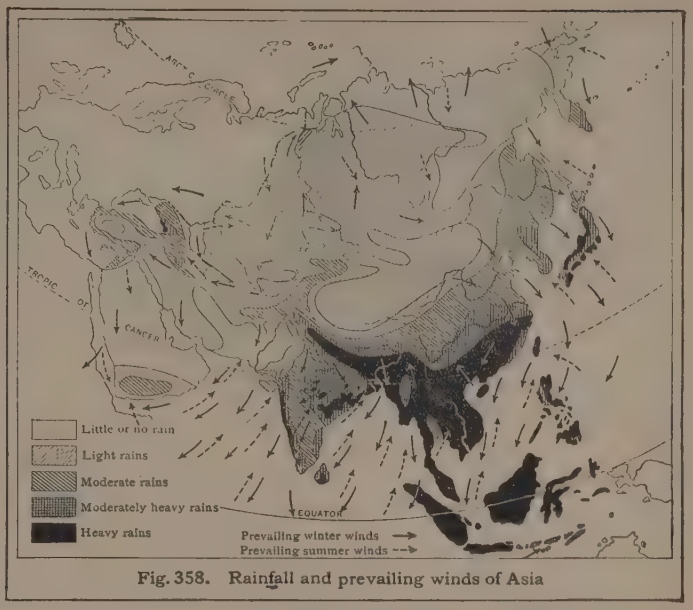

Fig. 358. Rainfall and prevailing winds of Asia

In the rainy regions there are dense forests where it is difficult to cut paths through the tangle of vegetation. Such regions are called *jungles*.

In central and southwestern Asia, including the great plateaus of Mongolia, Turkestan, Iran, and Arabia, there is little rain at any season, and most of the land is a desert. The lowlands west of these plateaus also have little rain. The temperature of central Asia is like that of most regions a long distance from the ocean. It is hot in summer, especially in the lowlands, and bitterly cold in winter.

The great Siberian Plain is bordered on the south by mountains which separate it from the highlands of central Asia. In the southern part there is enough rain for a fine forest growth, and the lower mountain slopes are forest-covered. Along the rivers are excellent farming and pasture lands. Farther north, near the Arctic Ocean, are tundras (Sec. 251) where only moss and a few low bushes can grow.

261. Animals.—In the jungles of southern Asia there are great numbers of wild animals, such as elephants, lions, tigers, poisonous serpents, and monkeys.

Many elephants are tamed and taught to carry heavy loads. People who live in desert regions use the camel as a beast of burden.

In the great grazing regions of Asia there are enormous flocks of sheep and goats and many cattle and horses. In the northern forest are bears, foxes, sables, and other fur-bearing animals. In the far north reindeer feed on the moss of the tundras, and the few people who live there depend upon these animals for food and clothing. They also use the reindeer as beasts of burden.

Fig. 359. A family of Persian nomads, and their tent

262. The People.—There are large parts of Asia in which only a few people can live. This is true of the desert regions of the southwest, of the high central plateaus, and of the cold, barren lands along the Arctic Ocean.

Most of the people of Asia live in the fertile river valleys and on the coastal lowlands of the south and east. About half the population of the whole world is found in these parts of Asia. In Japan, China, and India the population is very dense.

The people of Japan and China and some other parts of Asia belong to the yellow race. More than three fourths of the people of Asia belong to this race.

Most of the people of India, Persia, and Arabia belong to dark-skinned branches of the white race. Many Europeans now live in Asia, but chiefly in those parts that are near Europe, in the large cities, and in colonies of European countries.

263. Industries.—The chief industry of the densely settled regions in the south and east is agriculture. Some of the crops are very different from those that grow in our country. Others are exactly the same.

On the steppes of central and western Asia, where there is only enough rainfall for grass, grazing is the most profitable industry. In these regions most of the people live in tents and wander with their flocks from one pasture land to another. Such wanderers are called *nomads* (Fig. 359).

Fishing is an important industry along much of the southern and eastern coast, and in many of the rivers. In the northern part of the continent the people live mainly by hunting and fishing.

Mining is not so important as it will be when the many rich mineral deposits are more carefully located and worked. There are deposits of gold, silver, and copper in some of the mountains and in Siberia. The great petroleum fields are at the east end of the Caucasus Mountains, near the Caspian Sea. There are coal and iron deposits in Japan and China. The coal fields in China are very large, and only a small part of the coal has been used.

In Japan the native people welcome visitors and carry on trade with many foreign countries. In India and some parts of China the same thing is true. In some other parts of Asia the people still object to visitors, as did all the people of Asia not many years ago.

Review of Sections 260 to 263. — 1. What part of Asia has the heaviest rainfall? 2. Describe the climate of Arabia, Iran, and Mongolia. 3. Why is central Asia very warm in summer and very cold in winter? 4. Where is the Siberian forest? 5. What vegetation is there in the far north? Of what use is it?

6. Name some of the large wild animals of Asia. 7. Where are they found? 8. For what are elephants useful? 9. Of what use is the camel? The reindeer? 10. Where are many fur-bearing animals found? 11. In what parts of Asia can only a few people live? 12. Where do most of the people live?

13. To what race do most of the people of Asia belong? 14. Where do white people live?

15. Where is agriculture the leading industry? 16. In what parts of the continent is grazing more important? 17. Where is fishing carried on? Hunting? 18. What important minerals are found in Asia?

COUNTRIES OF SOUTHWESTERN ASIA

264. Turkey in Asia.—Before the World War of 1914–1918, the Turkish Empire embraced a small part of Europe (Sec. 248) and much of southwestern Asia, including Asia Minor, Mesopotamia, Syria, Palestine, and the west coast of Arabia. The old Turkish government was cruel, especially to Christians. In the war the Turks lost nearly all their lands in Asia except Asia Minor. *Angora* is the capital of Turkey.

Fig. 361. Weaving Turkish rugs

Asia Minor, the peninsula between the Black and Mediterranean seas, is nearly twice as large as Great Britain and Ireland, but has only about one fifth as many people. It is a high, uneven plateau, bordered on the north and south by mountains. On the slopes of some of the mountains there is enough rain for a little agriculture, but even there the people do not raise much. The industry of chief importance in Turkey, as in other countries of southwestern Asia, is grazing, and this industry does not support a dense population. Modern irrigation works, however, are being constructed for the purpose of bringing more land under cultivation (Fig. 360). Several railroads have been built in Asia Minor.

There is very little manufacturing in Turkey, or elsewhere in southwestern Asia, except the making of beautiful rugs, carpets, and shawls. The weaving industry has been carried on for hundreds of years. The best of the old rugs are highly prized (Fig. 361).

Fig. 360. Irrigation dam in Turkey

Fig. 362. A market in Damascus

Much of old Armenia is a part of Turkey. It is in the northeastern part of that country and is a land of farms and pastures. The Armenians are Christians and are one of the oldest nations on earth. They once numbered perhaps 8,000,000, but many of them have been killed by their hostile neighbors.

265. Syria and Palestine.—Two countries at the eastern end of the Mediterranean Sea are Syria, under French control, and Palestine, under the British. Palestine is interesting to us because it is the Holy Land of Christian and Jewish peoples.

Along the coast of Syria and Palestine there is a narrow plain where figs, olives, and other fruits of warm countries are grown. *Jerusalem*, the Holy City, stands on a low range of mountains between the coast plain and the deep, narrow valley of the Jordan River and Dead Sea.

The Dead Sea and a part of the Jordan Valley are below the level of the Mediterranean, and there is no outlet for the drainage except as the water is evaporated (Sec. 146). The waters of the Dead Sea are, therefore, very salt.

Jerusalem is connected by a railroad with *Jaffa*, a small seaport on the Mediterranean. *Beirut*, the leading port of Syria, is connected by rail with *Damascus*, the chief city in this region.

266. Arabia and Iraq.—From Damascus a railroad extends most of the way to *Mekka*. This city was the birthplace of Mohammed, who founded a religion in which the Turks, Arabs, and many other people believe. The Mohammedans think of Mekka as their Holy City, and make pilgrimages to it, as the Christians do to Jerusalem.

Mekka is the leading city of Hedjaz, a state in western Arabia which gained its independence during the World War.

Near the southern end of the Red Sea is *Mokha*, which once exported a famous coffee. The finest Arabian coffee is kept for use at home; that which is sold to foreign nations is of poorer quality.

Oman is an independent state of southeastern Arabia. It has a long coast line and carries on trade in dates and pearls, chiefly through *Maskat*, the capital.

The vast interior of Arabia is not well known. The people, who are wanderers, or nomads, live in tents and drive their flocks from one pasture land to another. They are ruled by chiefs, called sheiks.

Northeast of Arabia is Iraq. It is also called Mesopotamia, which means "between the rivers," because it lies in the valleys of the Tigris and Euphrates. These rivers rise in the northern highlands

and have built flood plains of fine, rich soil. Here, with the help of irrigation, large crops can be grown, and agriculture is improving. A railroad is under construction from Turkey to the Persian Gulf. Most of the people are Arabs.

Except the railroads already mentioned, we find few good highways in southwestern Asia. Most of the goods are carried across the deserts on camels, as they have been for thousands of years. For the sake of protection against robbers, many camel owners travel together and form a caravan.

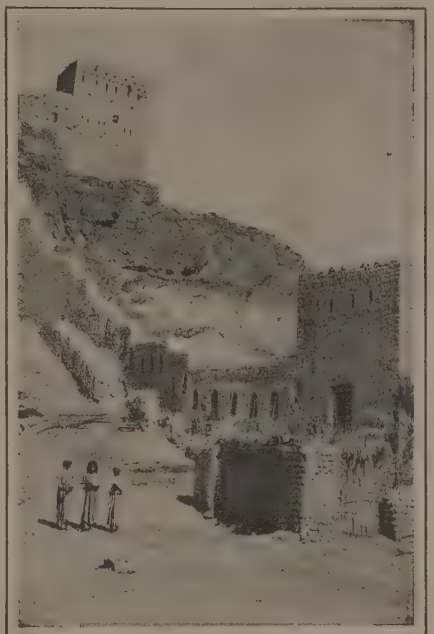

Fig. 363. A castle in Oman

Review of Sections 264 to 266.—1. In what part of Asia is Turkey? 2. Where is Arabia? 3. How does Asia Minor compare with the British Isles in size? In population? 4. Why is the population so small? 5. What is the most important industry in the countries of southwestern Asia? 6. What is the chief manufacture of those countries?

7. Where is Syria? Palestine? 8. Why is Palestine interesting? 9. Where are the following places, and why are they interesting: Jerusalem, Jaffa, Beirut, Mekka, Mokha? 10. Why are the waters of the Dead Sea salt?

11. Where is Hedjaz? Oman? 12. Where is Iraq? By what other name is it known? 13. Why is this an important region? 14. What industry is carried on in the interior of Arabia? 15. How are goods carried across the deserts of southwestern Asia?

267. Persia.—Persia is east of Mesopotamia. What waters border it on the north and on the south (Fig. 357)? Persia is more than five times as large as the British Isles, but has only about one fifth as many people. *Teheran* is the capital. Find it on the map.

Much of the country is a desert. Like Asia Minor, most of Persia is a high plateau bordered by mountains. The chief industry of Persia is grazing. The rain that falls on the mountain slopes furnishes water for some irrigation. In the mountain valleys, and along the shores of the Caspian Sea, grain and fruit are raised. Silk, cotton, and wool are produced also. Many of the people are engaged in transporting goods across the desert.

The finest Persian shawls, rugs, and carpets are even more beautiful than those of Turkey. The patterns used are hundreds of years old.

268. Afghanistan.—Afghanistan lies east of Persia and north of India. It is a mountainous country, nearly as large as Texas. Grazing is the leading industry, and many horses, camels, and sheep are raised here. There is also some agriculture, but, as in Turkey and Persia, irrigation is necessary and the crops are not large.

Review of Sections 267 and 268.—1. Where is Persia? 2. How does it compare in size and population with Great Britain? 3. Where is agriculture carried on? 4. Name some of the important products. 5. What other industries are carried on?

6. Where is Afghanistan? 7. Tell about its industries.

F

Fig. 364. Summits of the Himalaya Mountains, the great mountain range of southern Asia. The most distant peak, near the center, is Mount Everest, the highest mountain peak in the world

COUNTRIES OF SOUTHEASTERN ASIA

269. India.—The Empire of India, or British India, as it is often called, belongs to Great Britain, and the king of Great Britain is also emperor of India. This country occupies the peninsula of India and includes Baluchistan on the west and Burma on the east.

Burma is a part of the peninsula of Indo-China and borders on the Bay of Bengal. It is about as large as Texas, and has three times as many people. The rainfall is heavy and the soil is fertile. The chief products are rice and lumber.

Fig. 365. Bathing in the Ganges, Benares

Baluchistan is a region of barren mountains, deserts, and stony plains. There is but little rain, the summers are hot, and the winters very cold. Wherever there is enough water to make it possible the land is cultivated. Grain and fruit are the chief products.

North of India, in the mountains, is Nepal, a small country under the protection of Great Britain.

Northern India is a region of great highlands. Here are the southern ranges of the Himalayas, the highest mountains of the world (Fig. 364). During the summer time, in this part of Asia, the winds are from the ocean. The rainfall is more than 100 inches a year. Because of the heavy rains and the large amount of water that comes from the melting snow, great rivers have their sources in these highlands. They flow for long distances through the mountain valleys before they reach the bordering lowlands. South of the Himalaya Mountains they have built a great lowland plain of the material brought down from the highlands. Name the three longest rivers of this plain (Fig. 355).

The lowland plain of India stretches in a broad belt across the peninsula from the Bay of Bengal to the Arabian Sea. It has a fine and fertile soil and is the chief agricultural region and the most densely populated part of India. In the east, along the lower courses of the Ganges and Brahmaputra, there is usually enough rain for agriculture. Farther west it is often necessary to irrigate the land. The British government has greatly enlarged and improved the old irrigation works of the natives.

South of the lowland plain is the Dekkan Plateau. Its eastern and western borders have been named the Eastern Ghats and the Western Ghats. During the summer, when the winds blow from the ocean, there are heavy rains along the seaward slopes of the Western Ghats. The rains on the plateau are more moderate. In the winter, the winds blow from the land (Fig. 358), and there is less rain. In many parts of the plateau, irrigation is necessary, and here, as in the northern plain, new works have been built and the native works have been greatly improved.

270. Products of India.—Rice, wheat, and millet are the important food crops of India. Much of the rice is raised along the lower Ganges and in the region around the Bay of Bengal. Most of it is needed for home use, but much is exported.

Fig. 367. Ships in the harbor of Bombay

Wheat is grown on the Dekkan and on the northern plains. In years when crops are good, much wheat is exported, especially to Great Britain. Millet, a cereal with big heads of small seeds, is used by the poorer people in place of wheat.

When these crops fail, because of lack of rain or for some other reason, food must be sent from other parts of the world, and even then thousands of people starve. Famines have been frequent, even in recent years, and millions of people have starved to death.

Much tea is grown in the Brahmaputra Valley, and cotton on the Dekkan and elsewhere. Some of the cotton is manufactured in the mills of India, but most of it is sent to England.

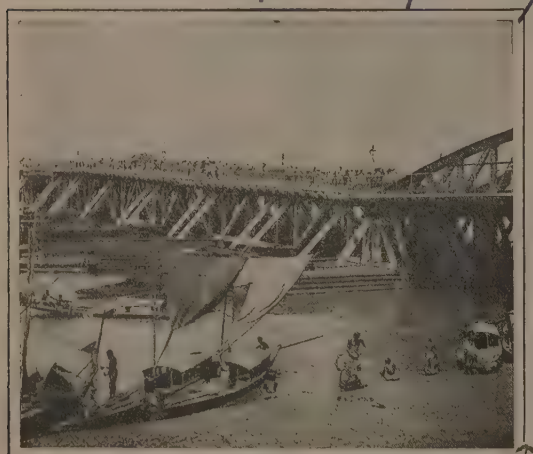

Fig. 366. Pontoon bridge over the Hugli River, a mouth of the Ganges, at Calcutta

Jute, silk, spices, teakwood, and indigo and other dyes are valuable products. Teak is an especially useful wood, because it does not decay easily and because worms do not destroy it, as they do many woods in warm countries.

Some minerals are found in India.

Railroads and navigable rivers make trade with the interior easy. The foreign trade, much of which is with Great Britain, is carried on chiefly through the ports of *Calcutta* and *Bombay*.

271. Cities and People of India.—*Calcutta* is on the Ganges delta, not far upstream from the Bay of Bengal (Fig. 366). It is the largest city of India and was for many years the capital. In 1911, however, the government was moved back to the ancient capital city, *Delhi*. Find this city on the map. *Bombay*, on the west coast, has a better harbor than Calcutta, and its trade is steadily growing (Fig. 367).

The natives of India are largely of the white race, and most of them are called Hindus. Their Holy City is *Benares*, on

the Ganges River (Fig. 365). There are many other large cities in India. The total population of the country is about three times that of the United States, although its area is less than two thirds as great.

In India, as in most of the warm southern countries of Asia, many of the natives have fine, strong bodies and are able to work hard. Because of the climate they wear but little clothing. The people from Europe and other cooler countries find it necessary to use light clothing and adopt many of the native ways. Even then few of them can live in such hot countries for many years.

One of the things that prevent progress in India is the caste system. The Hindus are divided into several great family groups, or castes, and the members of each caste follow the same occupation and have as little as possible to do with the people who belong to other castes.

Fig. 369. Picking tea, Ceylon

Fig. 368. Elephants bathing, India

272. Ceylon.—Southeast of the peninsula of India is the island of Ceylon, which is nearly as large as Ireland. It belongs to Great Britain. Its products include rice, coconuts, rubber, spices, and especially tea (Fig. 369), in the growing of which it holds a leading position. There are many mines of graphite, a mineral used in making the "lead" for our lead pencils.

Colombo, the capital, is important as a coaling and food station for ships engaged in trade between eastern Asia and European ports.

Review of Sections 269 to 272.—1. Where is British India? 2. Where is Burma? What are its chief products? 3. Where is Baluchistan?

4. Where are the agricultural regions of India? 5. Where is it necessary to use irrigation? Why? 6. How has the British government helped agriculture in India? 7. Where is rice grown? Wheat? Tea? Cotton? 8. Where is much of the cotton manufactured?

9. Through what ports is most of the foreign trade carried on? 10. Where is Delhi? Benares? Why are these places interesting?

11. Compare India with the United States in size and in population.

12. What is the caste system? 13. How does it interfere with the progress of India?

14. Where is Ceylon? 15. To what country does this island belong? 16. What are its important products? 17. What city is the capital? 18. Why is it an important port?

273. Indo-China.—Indo-China is the easternmost of the three southern peninsulas of Asia. Part of it is the long, narrow Malay Peninsula, which extends southward almost to the Equator.

Western Indo-China includes Burma, which has already been studied, and Siam. The eastern part belongs to France and is called French Indo-China. The Mekong River forms the boundary between Siam and French Indo-China for a long distance. *Bangkok* is the capital of Siam.

Both Siam and French Indo-China are mountainous, but have abundant rain, and in both, agriculture is the chief industry. Rice and millet are raised, and many valuable woods, including teak, are found in the forests. Other products include spices, tea, silk, and some gems and metals.

At the southern end of the Malay Peninsula is the British colony called the Straits Settlements, and near it are some small native states under the protection of the British government. Here spices (Fig. 370), gums, and fruits are produced, but the region is noted chiefly for its rubber plantations and its tin mines, which yield more rubber and tin than any other country in the world. *Singapore* is an English city on an island at the southern end of the peninsula. Its position has made it an important coaling and supply station, especially for ships that are engaged in carrying goods between the ports of Europe and those of eastern Asia (Fig. 371).

274. The East Indies.—The Philippines (Sec. 168) belong to the United States, and the other islands of the East Indies belong to European nations. The map (Fig. 357) shows what countries own islands in these waters.

The most important of these islands belong to the Netherlands. Java has a much greater population than all the rest of the East Indies together. This island produces rice, coffee, tea, sugar, rubber, and tobacco. *Batavia* is the capital. The trade is chiefly with the Netherlands.

Sumatra, a part of Borneo, and a part of New Guinea, as well as many smaller islands, also belong to the Netherlands.

Fig. 370. Pepper plants in the Malay Peninsula

Fig. 371. Singapore harbor, as seen from Commercial Square, Singapore

Review of Sections 273 and 274.—1. What countries are included in Indo-China? 2. Name some of the important products of each country. 3. Where are the Straits Settlements? 4. Where is Bangkok? Singapore?

5. To what nation do the Philippines belong? 6. What other nations own islands in the East Indies? 7. What country owns the largest number of these islands? 8. What is the most populous island? 9. What are its products? 10. With what country does it chiefly trade?

Fig. 372. Hanyang Iron Works, a large modern industrial plant. Beyond the river is Hankow

CHINA

275. Political Divisions. — China is in the east-central part of Asia. Some parts of the country are densely peopled, and its total population is more than twice that of North America.

China was once a "hermit" nation. The Chinese people would not trade with foreigners, nor permit strangers to enter their country. For many centuries they made no change in their mode of life.

In recent years, however, there have been many changes. Chinese ports have been opened to foreign trade. Many young Chinese have gone to school in the United States and other countries. Mines have been dug, and railroads and factories built (Fig. 372). Finally, in 1912, the Chinese government was changed. For hundreds of years it had been an empire, but it was then made a republic.

In addition to the country properly called China, the Chinese claim control over four provinces, — Tibet, Sinkiang, Mongolia, and Manchuria. The old northern boundary of China is marked for a thousand miles by the famous Great Wall, which was originally built as a defense against invaders.

276. Tibet. — Tibet is the southwestern province, and is north of India. It is a high plateau with higher mountain ranges bordering and crossing it. Much of the plateau is so high that it is very cold, and it is so shut in by mountains that there is little rain. The people keep goats, sheep, and yaks. For food they depend chiefly upon the flesh of these animals and upon the rich milk of the yak. Much of their clothing is made from the wool, hair, or hides of these animals. The yak, which is like a large ox, is also used as a beast of burden. The population is not dense anywhere, because there is not enough food to keep a large population alive. Most of the people live in the upper Brahmaputra Valley, where there is some agriculture (Fig. 356).

Lassa is the sacred city of the Tibetans and the capital of the province. Strangers are not welcome in Tibet. Few foreigners have visited the province, and very few have ever entered the capital city.

Fig. 373. Exports of Manchuria—bean cake and oil—at Dairen

277. Other Provinces.—North of Tibet is the province of *Sinkiang*, a desert country of no great importance. The inhabitants are nomads. There are, however, a few places where springs or oases have made small settlements possible.

Mongolia is a mountainous and dry province in which grazing is the most important industry.

Manchuria lies east of Mongolia and borders on the Yellow Sea. It is a region of plains. The soil is excellent, the climate is temperate, and there is enough rain for farming. This province produces large crops of millet, wheat, and beans (Fig. 373).

278. The Real China.—China is south of Mongolia, with a long seacoast on the Pacific Ocean. On the coast and along the great rivers there are beautiful, broad, fertile lowlands. In the south and west the country is mountainous, like the adjoining districts in Indo-China and Tibet.

In much of China there is plenty of rain for agriculture, and in the southeastern part the rainfall is often very heavy. The soil is fine and rich, especially in the valleys of the two great rivers, the Yangtze and the Hwang

These two rivers rise in the interior highlands of eastern Tibet and flow for hundreds of miles across China to arms of the Pacific Ocean. The Hwang has frequent floods, and at times of very high water the river sometimes changes its course through the lowlands and causes a great loss of life.

279. The Leading Industries.—A fine, rich soil is brought down by the Yangtze and Hwang during flood times, and in their valleys agriculture is the chief industry. The land is cultivated with the greatest care, and in some regions three or four crops are raised each year in the same fields. On the steeper slopes

Fig. 374. Irrigated cabbage fields, China

terraces have been built, so that the soil will not wash away when it rains. For making some of these terraces, soil was carried long distances.

In parts of the country there is not enough rain for the crops, and the people have built irrigating ditches and canals. These ditches are arranged so that the water will run from one to another and wet the whole field (Fig. 374).

Fig. 375. Chinese lumbermen and rafts of bamboo poles, near Hangchow

Rice, cotton, and sugar cane are grown in the lowlands. Rice is the chief food of the people. It is raised in fields that can be easily flooded. Mulberry trees are cultivated for their leaves, on which many millions of silkworms are fed. China produces about one fourth of the world's supply of silk fiber, or raw silk.

Tea is another great product of China. A part of the Chinese tea is exported, although the best is kept for home use. The poorest grades are sent to the people of Tibet and Russia.

There are extensive fisheries along the coast, and fish are much used for food.

The Chinese have always done much manufacturing by hand; and now a number of silk mills and cotton mills are in operation. There is a scanty supply of lumber (Fig. 375). Coal and metals are found in large quantities, and as manufacturing increases and more railways are built, the mines of China will become more and more valuable.

280. Means of Transportation. China has several long railroads, and others are being built. Much of the interior trade is carried on by boats and rafts on the rivers and canals. It is common for persons living in the interior of the country to build rafts of bamboo, load them with produce, float downstream on them to the markets, sell both the rafts and their loads, and then walk back to their homes. Wheelbarrows with a large wheel in the middle, and covered chairs carried on the shoulders of men, are in common use.

281. Methods of Work. In our own country, machines and tools of all sorts are used to help us in our work. Such machines will do the work of many men. Some agricultural machinery has been introduced into China and other parts of the Orient. Most of the work, however, is still done by hand or with old-fashioned tools, such as the Chinese have used for hundreds of years (Fig. 376).

Fig. 376. Sawing boards by hand, China

Fig. 377. Lifting water by hand labor

The Chinese have several ways of lifting water from rivers or canals for irrigation. Most of them require much human labor. By one method two men use a water-tight basket with long rope handles. Standing on the bank, they fill the basket in the canal and swing it over the land and empty the water into one of the irrigating ditches (Fig. 377). This is slow and hard work, but the men keep at it for hours at a time.

The Chinese are energetic and honest and they are skillful farmers and merchants. By their great industry they are able to support nearly one fifth of the world's population in a country half as large as the United States.

Many customs of the Chinese seem odd to us. A Chinaman takes off his shoes instead of his hat when he enters a house. In reading a book he begins at what we should call the last page; and in the older schools the children study aloud. We should find it very difficult to learn our lessons if we had to do it in that way. The modern Chinese schools, however, are much like our own (Fig. 378).

Shanghai is the chief seaport of China. *Peking* is the capital, and near it is the port of *Tientsin*. *Canton* is an important port in the south, and *Hankow* (Fig. 372) is the chief city in the interior.

Much of the trade is with *Hongkong*, a British colony near Canton.

Review of Sections 275 to 281.— 1. Where is the Chinese Republic? 2. What changes have taken place in China in recent years?

3. Name the four provinces over which China claims control. 4. Where is Tibet? 5. What work do the Tibetans do? 6. In which of the four provinces are large crops raised? What are the crops?

7. Where are the lowlands of China? 8. Name the two great rivers of this region.

Fig. 378. Chinese school children, Peking

9. What are the chief crops raised in China? 10. How are the steeper slopes prepared for use? 11. How is the land irrigated in some parts of China?

12. What manufacturing is done? 13. How are goods transported? 14. Tell some Chinese ways of doing work.

15. What are the chief ports? 16. What is the capital city? 17. Where is Canton? Hankow?

Fig. 379. Fujiyama. In the foreground Japanese farmers are harvesting rice

THE EMPIRE OF JAPAN

282. Position and Area.—The Empire of Japan includes the islands off the east coast of Asia, between the peninsula of Kamchatka at the north and the Philippines at the south. It also includes the peninsula of Korea on the mainland; and *Dairen* (Fig. 373), in Manchuria, is under Japanese rule.

Most of the Japanese people live in the central group of large islands. The area of this group is a little less than that of the state of California; but the population is more than half as great as that of the whole United States.

283. Physical Features.—The islands are mountainous and have been built in part of volcanic material. There are still active volcanoes, and the earth is sometimes shaken by earthquakes. Bridges and other public works must be made very strong, so that earthquakes will not damage or destroy them. For the same reason the homes of the people are built low and of light material, largely bamboo, so that they will not be easily damaged.

The rainfall is heavy. Snow falls on the higher mountains and on the northern islands. The most beautiful mountain peak in Japan is the snow-crowned Fujiyama (Fig. 379). This volcanic cone is regarded by the Japanese as a sacred mountain and is shown in many of their pictures and on their decorated china and other ware. In the southern islands the climate is warmer than in the northern. The lower mountain slopes are covered with forests. In the spring of the year the country is lovely with flowering fields and the blossoms of trees and vines.

The rivers of Japan are all short streams. They rise in the mountain regions, and during times of heavy rainfall they are very rapid. The soil that they have brought from the highlands in ages past has been spread out as flood plains and coastal lowlands, on which most of the people of Japan live.

Fig. 380. Reeling silk from the cocoon, Japan

284. The People.—The Japanese belong to the yellow or Mongolian race, as do also the Chinese. They are a small but active and courageous people. They love their country and they love beautiful things.

They are especially artistic in their manufactures, which include fine porcelain and glass ware, inlaid and carved woodwork, and silks. Many of these articles are so beautiful and so well made that they are sold for large sums. Wonderful examples of Japanese work may be seen in the art museums of our own and other countries.

For several centuries the Japanese, like the Chinese, would not allow foreigners to come into the country. Now they welcome strangers and have adopted many of the ways of living and many of the industries of other people and countries. In nearly all lines of industry they have made great progress.

285. Industries and Cities.—The chief food crop of Japan is rice. Tea is another valuable crop, and some barley, millet, and cotton are raised. Fishing is a leading industry, and supplies a large part of the food of the Japanese people. Japan produces a vast amount of raw silk, both for use at home and for export (Fig. 380).

The minerals of Japan include iron, coal, and copper. They are of great value to the Japanese, especially since their manufacturing industries are developing so rapidly. The manufacture of cotton and silk is growing, and for this industry Japan imports much cotton, besides using the little that she raises at home. Other important industries are the manufacture of matting and the making of articles of bamboo.

Japan has built many miles of railway, so that trade with the interior is easy. The foreign trade of Japan is large, and in addition to the Japanese vessels steamships of many nations make regular trips to the ports of Japan.

The chief cities are *Tokyo*, the capital, and its seaport, *Yokohama*. *Osaka* is noted for its cotton manufactures.

286. Chosen.—The ancient country of Korea, now known as Chosen, on the mainland of Asia, belongs to the Japanese Empire. The surface of the country is irregular and in parts mountainous. The soil is good and the climate is favorable to agriculture, which is the chief industry. There are rich mineral deposits. Under the rule of Japan the country is being provided with roads and railroads. *Seoul* is the capital and the leading city.

Review of Sections 282 to 286.—1. What does the Japanese Empire include? 2. Where do most of the Japanese people live? 3. Why are their houses made low and light?

4. For what artistic work are the Japanese famous? 5. What are the important food crops raised in Japan? 6. What minerals are found there? 7. Name two important manufactures. 8. What aid to interior commerce have the Japanese constructed? 9. Name three important cities.

10. Describe Chosen.

ASIATIC RUSSIA

287. Siberia.—Siberia is larger than Europe. Its population, however, is only about as large as that of the state of New York. This vast region now comprises several main divisions. In the cold and barren region of the north the country can never support a large population. The more fertile regions of the central and southwestern part of Siberia are suitable for farms and pastures. The southeastern part of Siberia is a region of forested mountains, barren plateaus, and swampy valleys. The country is sparsely peopled. Agriculture is carried on chiefly by Russian settlers.

The first Europeans to settle in Siberia were the criminals and political prisoners sent from Russia to work in the mines. At that time it was believed that the country was so cold and barren that it could never be settled and developed as a farming country. It was soon found, however, that there were large regions that could be used for grazing and agriculture (Fig. 381). The government began to help Russian farmers to settle there. A railroad was built from Moscow in Europe to *Vladivostok* on the Pacific coast of Asia. Along the line of this railroad many new settlements have been started, and farming and mining have developed rapidly. Wheat, oats, and rye are raised in large quantities, and much butter is shipped to European markets.

Siberian mines yield gold, iron, copper, and other minerals. *Tomsk* and *Irkutsk* are the leading cities.

288. Kirghiz and Turkestan.—East of the Caspian Sea are Turkestan and Kirghiz, in a dry region where grazing is the chief industry. Some land is cultivated along the lake shores and in the river valleys and oases. Many of the people are skillful in making rugs from the wool of sheep and of goats.

289. The Caucasus Region.—The region between the Black and Caspian seas is divided into a number of small republics, under the control of the Russian government. The mountains are high, but grain, fruit, and cotton are grown in the fertile valleys. In the drier lowlands there are some irrigated farms and large pastures. Near *Baku* on the Caspian Sea is an important oil-producing region.

Review of Sections 287 to 289.—1. Of what does Asiatic Russia consist? 2. Compare the size of Siberia with that of Europe. 3. Compare its population with that of New York state. 4. What use did Russia once make of Siberia? 5. Where have recent settlements been started? 6. What are the leading industries? 7. Where are Tomsk and Irkutsk? 8. What are the industries of Turkestan and Kirghiz? 9. What are the industries of Caucasus?

Fig. 381. Irrigated vegetable gardens, southern Siberia

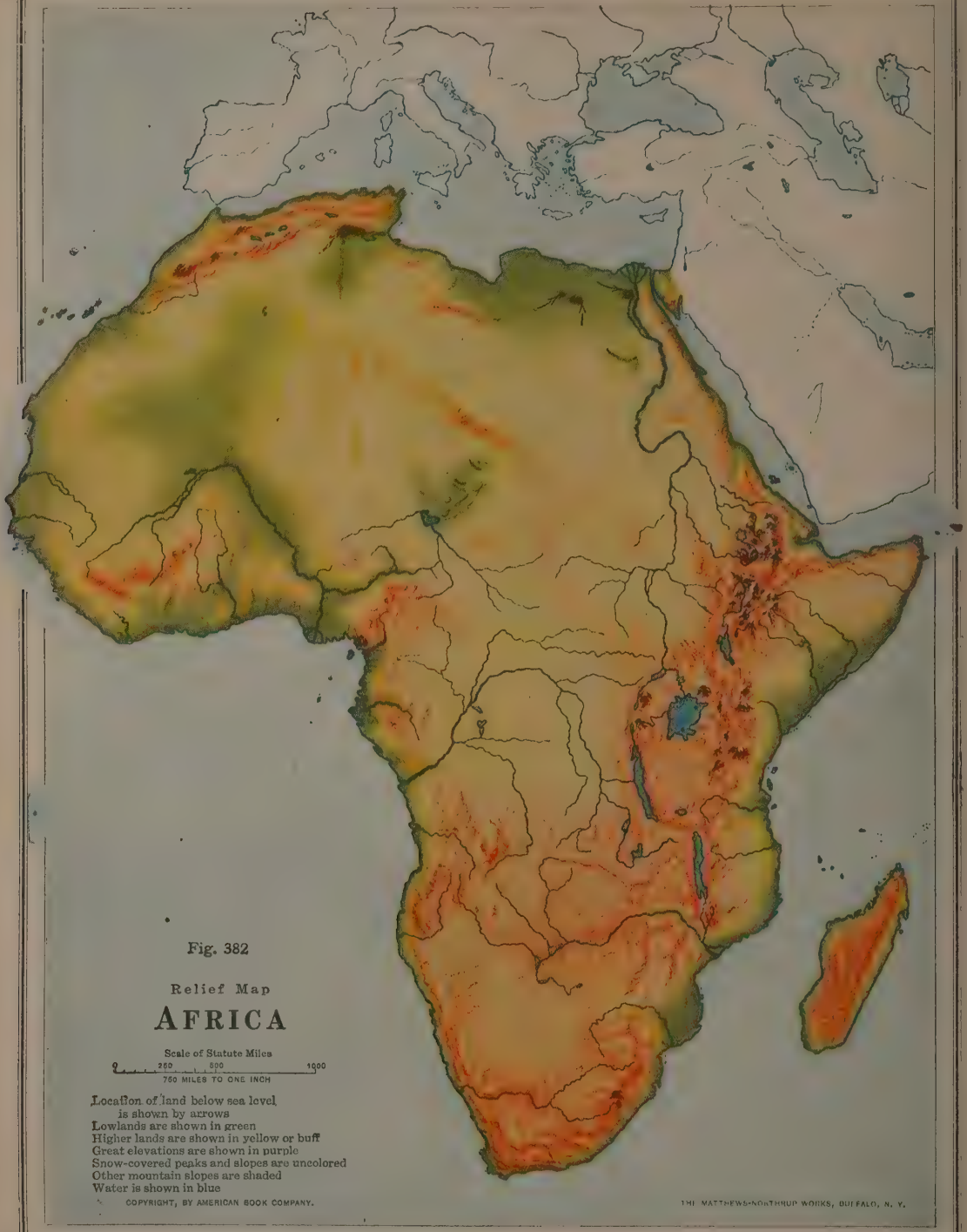
Fig. 382
Relief Map
AFRICA
Scale of Statute Miles
0 250 500 1000
750 MILES TO ONE INCH
Location of land below sea level is shown by arrows
Lowlands are shown in green
Higher lands are shown in yellow or buff
Great elevations are shown in purple
Snow-covered peaks and slopes are uncolored
Other mountain slopes are shaded
Water is shown in blue
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Fig. 383. The Nile River as seen from a bridge in Cairo

AFRICA

THE CONTINENT

290. Position.—Africa is second in size among the continents. It is about three times as large as Europe, but it has a much smaller population. The equator crosses the continent nearly midway between its northern and southern points. The northern part is larger, however, as it has a greater width east and west.

What sea is north of Africa (Fig. 384)? What sea and ocean are east of it? What ocean is west?

At the northeast, Africa is joined to Asia by the narrow Isthmus of Suez. At the northwest, Africa almost touches southern Spain, but is separated from it by the Strait of Gibraltar.

291. Coast Line and Surface.—The coast line of Africa is regular, and there are few good harbors. This condition delayed the exploration of the continent, and still hinders commerce.

A low and narrow coastal plain borders most of the continent, but it is very hot and unhealthful. From the coastal plain the surface rises rapidly to a great interior plateau, which covers most of the continent. The steep slope is so high that in places, as seen from the ocean, it looks like a range of mountains bordering the coast. There are, however, only a few mountain ranges in Africa, and they are not equal in height or length to the great ranges of Asia or of America.

ATLANTIC OCEAN
EUROPE
Bay of Biscay
Black Sea
Caspian Sea
Caucasus Mts.
Mediterranean Sea
Strait of Gibraltar
C. Spartel
C. Bon
Atlas Mts.
MADEIRA IS.
CANARY IS.
C. Bojador
Wady Draa
Gulf of Gabes
Gulf of Sidra
Below Sea Level
Libyan Desert
Sahara
Tropic of Cancer
C. Blanco
Tibesti Mts.
Tarso Mts.
Jebel Uweinat
Isthmus of Suez
Suez Canal
Mt. Sinai
Arabian Desert
Red Sea
Persian Gulf
1st Cataract
2nd Cataract
3rd Cataract
4th Cataract
5th Cataract
6th Cataract
Nubian Desert
Senegal R.
C. Verde
Niger R.
Guinea Highlands
Kong Plateau
L. Chad
Bahr el Ghazal
Blue Nile
White Nile
Abyssinian Plateau
Bab-el-Mandeb
Gulf of Aden
SOKOTRA
C. Guardafui
Kaffa Hills
Bight of Benin
C. Palmas
Cameroon Mts.
Makua R.
Lake Albert
Ruwenzori Mts.
Mt. Elgon
Mt. Kenya
L. Rudolf
Gulf of Guinea
FERNANDO PO I.
Bight of Biafra
PRINCES I.
ST. THOMAS I.
C. Lopez
ANNOBON I.
Equator
Congo R.
Stanley Falls
Stanley Pool
L. Edward
L. Victoria
Mt. Kilimanjaro
19,730
L. Tanganyika
L. Nyasa
Mushinga Mts.
Mt. Zomba
ZANZIBAR I.
PEMBA I.
MAFIA I.
ALDABRA I.
INDIAN OCEAN
ATLANTIC OCEAN
ASCENSION I.
ST. HELENA I.
C. Delgado
C. Amber
COMORO IS.
Mt. Ayuber
Mozambique Channel
MADAGASCAR
MAURITIUS I.
REUNION I.
Kasai R.
Kwango R.
Kwanza R.
Kunene R.
Zambezi R.
Victoria Falls
C. Frio
Walfisch Bay
Kalahari Desert
Tropic of Capricorn
C. Corrientes
Delagoa Bay
C. Ste. Marie
Orange R.
Vaal R.
Nieuwveld Mts.
C. of Good Hope
C. Agulhas
Fig. 384
Physical
AFRICA
Scale of Statute Miles
0 250 500 1000
750 MILES TO ONE INCH
ELEVATIONS IN FEET.
OVER 5000
2000 TO 5000
1000 TO 2000
SEA LEVEL TO 1000
LAND BELOW SEA LEVEL
Depths in Fathoms.
0 to 100
100 to 1000
1000 to 2000
over 2000
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20° Longitude West 10° from Greenwich 0°
10° Longitude East 20° from Greenwich 30°
40°
60°

F

The plateau surface is especially uneven in the southern part of the continent, where it is cut up by the rivers. In the northwest are the Atlas Mountains. They are the longest range of mountains in Africa. There is another mountain region in eastern Africa. It extends from the Plateau of Abyssinia to the region of lakes in the southeast. One of the highest points in this region is the fine volcanic peak of Mt. Kilimanjaro, southeast of Lake Victoria. Northwest of this lake is the lofty range known as the Ruwenzori Mountains.

292. Climate and Vegetation.—Because of the position of Africa in the hot part of the earth, the climate of much of the continent is such that white men cannot make their homes there. The cooler parts of Africa are in the northwest and on the higher plateaus of the south.

Central Africa, near the Equator, has a heavy rainfall with a dense forest jungle, like that of the Amazon basin in South America. South of the forest belt, and also along its northern edge, are regions that have rain only a part of the year. Trees grow along the stream banks, but the rest of the country is a region of *savannas*, or grasslands.

Southern Africa is dry, except along the eastern coast, where the winds from the Indian Ocean bring some rain.

Northern Africa, except the northern coast and a narrow irrigated strip in the northeast, is a great desert. This is the Sahara (Fig. 384). It is larger than any other desert in the world. In crossing it, caravans make their way from one oasis or spring to another. There are not many of these oases, and during a part of the journey not a tree or a blade

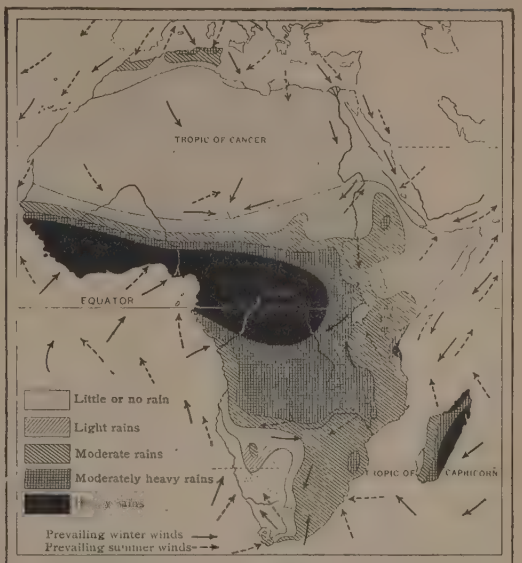

Fig. 385. Prevailing winds and rainfall of Africa

of grass can be seen. Journeys across the desert are difficult and dangerous because of sand storms, because of great hills of sand, or dunes, that have been piled up by the winds, and because of fierce native robber tribes that roam over this region.

Travelers on the desert greatly dread the sand storms. The wind blows with violence and picks up the sand from the surface of the desert, as winds in our country sometimes pick up the dust from roads and fields, until the air seems filled with it.

When such a storm overtakes a caravan, the camel drivers make the great beasts kneel. This they usually do willingly, for they seem to know what is coming. They close their eyes and push their noses into the sand. The men of the caravan throw themselves face down on the desert, close their eyes, and cover their heads with a cloth until the storm has passed.

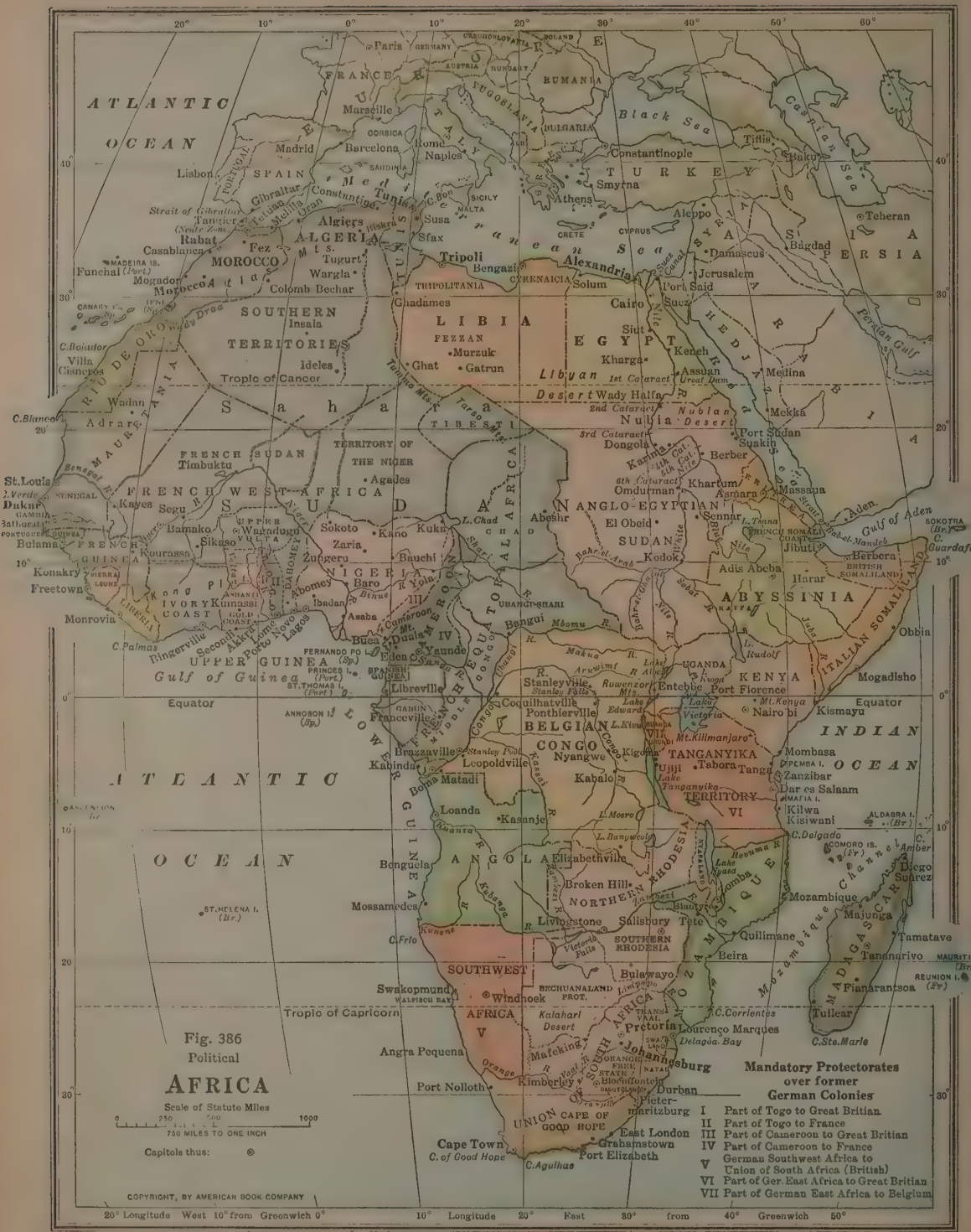
ATLANTIC OCEAN
Mediterranean Sea
Black Sea
Caspian Sea
Red Sea
Persian Gulf
Gulf of Aden
Gulf of Guinea
INDIAN OCEAN
ATLANTIC OCEAN
Paris
Marseille
Madrid
Barcelona
Lisbon
Rome
Naples
Constantinople
Smyrna
Athens
Tiflis
Baku
Aleppo
Damascus
Bagdad
Teheran
Jerusalem
Port Said
Suez
Cairo
Alexandria
Tripoli
Bengazi
Solum
Algiers
Tunis
Susa
Sfax
Rabat
Casablanca
Fez
Tugurt
Wargla
Colomb Bechar
Ghadames
Siut
Keneh
Kharga
Assuan
Medina
Mekka
Port Sudan
Suakin
Berber
Khartum
Omdurman
Asmara
Massawa
Sennar
Abeshr
El Obeid
Kodok
Adis Abeba
Harar
Berbera
Jibuti
Obbia
Mogadisho
Kismayu
Nairobi
Port Florence
Entebbe
Mt. Kenya
Mt. Killmanjaro
Mombasa
Zanzibar
Dar es Salaam
Tanga
Kilwa
Kisiwani
Lourenço Marques
Beira
Quilimane
Tamatave
Tananarivo
Majunga
Mozambique
Tullear
Fianarantsoa
Pretoria
Johannesburg
Durban
Pietermaritzburg
East London
Port Elizabeth
Grahamstown
Cape Town
Bulawayo
Windhoek
Swakopmund
Walfisch Bay
Angra Pequena
Port Nolloth
Kimberley
Bloemfontein
Mafeking
Salisbury
Broken Hill
Elizabethville
Leopoldville
Brazzaville
Stanleyville
Coquilhatville
Ponthierville
Libreville
Loanda
Benguela
Mossamedes
Kasanje
Kabalo
Nyangwe
Kigoma
Tabora
Ujiji
Zungeru
Bauchi
Kano
Sokoto
Kuka
Zaria
Yola
Baro
Ibadan
Abeokuta
Lagos
Kumassi
Bamako
Segu
Timbuktu
Agades
Waradugu
Sikaso
Kourassa
Konakry
Freetown
Monrovia
Bingerville
Accra
Cape Palmas
Bathurst
St. Louis
Dakar
Bulama
Funchal
Canary Is.
Madeira Is.
Azores
St. Helena I.
Ascension I.
Fernando Po I.
Annobon I.
St. Thomas I.
Prince's I.
Comoro Is.
Aldabra I.
Mauritius I.
Reunion I.
Amber C.
C. Delgado
C. Corrientes
C. Ste. Marie
C. Frio
C. Agulhas
C. of Good Hope
C. Bojador
C. Blanco
Equator
Tropic of Cancer
Tropic of Capricorn
Libyan Desert
Nubian Desert
Sahara
Kalahari Desert
Nile
Niger
Congo
Zambesi
Orange
Limpopo
Lake Victoria
Lake Tanganyika
Lake Nyasa
Lake Rudolf
Lake Chad
Stanley Falls
Victoria Falls
Kalabo
Kasanje
Loanda
Benguela
Mossamedes
Angra Pequena
Port Nolloth
Cape Town
Kimberley
Bloemfontein
Durban
Pietermaritzburg
East London
Port Elizabeth
Grahamstown
Johannesburg
Pretoria
Lourenço Marques
Beira
Quilimane
Tamatave
Tananarivo
Majunga
Mozambique
Tullear
Fianarantsoa
Mombasa
Zanzibar
Dar es Salaam
Kilwa
Kisiwani
Mogadisho
Kismayu
Obbia
Nairobi
Port Florence
Entebbe
Mt. Kenya
Mt. Killmanjaro
Kigoma
Tabora
Tanga
Mombasa
Zanzibar
Dar es Salaam
Kilwa
Kisiwani
Mozambique
Majunga
Tamatave
Tananarivo
Fianarantsoa
Tullear
Durban
Johannesburg
Pretoria
Lourenço Marques
Beira
Quilimane

Fig. 387. The African elephant is the largest of land animals. Its tusks are much larger than those of the Asiatic elephant. They furnish most of the world's supply of ivory

Along the northern coast, especially in the west, there is enough rain to allow the cultivation of grapes, olives, and other tropical fruits. In the desert there are some elevated regions in which enough rain falls to form temporary streams. Along them grass springs up; but the streams soon dwindle away, leaving only dry and stony beds.

293. Drainage.—As the central and southeastern parts of Africa have the heaviest rainfall, it is in these regions that lakes are found and large rivers rise.

The longest of the African rivers is the Nile (Fig. 383). Its main stream rises in the region of great lakes, and its chief tributary comes from the Plateau of Abyssinia. Along its banks is the narrow irrigated region of northeast Africa.

The Congo, the second river in length, also rises in the lake district. As it flows through a region of abundant rains it has many tributaries. The Niger in the west and the Zambezi in the south are large streams also (Fig. 384).

Where these rivers leave the plateau, they are interrupted by great falls and rapids, which have hindered trade with the interior. Beyond the falls, however, the rivers of the plateau can be navigated for hundreds of miles.

How many great lakes do you find in the eastern highlands? Name the largest. Lake Chad, south of the Sahara, has no outlet.

294. Animals.—Among the wild animals found in Africa are the chimpanzee, the gorilla, the rhinoceros, the hippopotamus, the elephant (Fig. 387), the giraffe (Fig. 388), and the lion. There are many monkeys, and many poisonous serpents and annoying insects. The camel (Fig. 392) is the chief beast of burden in dry regions. Ostriches are raised for their feathers (Fig. 389). How many African animals have you seen at a circus or at a zoölogical garden?

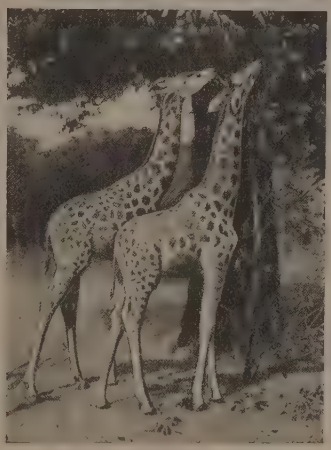

Fig. 388. Giraffes, eighteen feet high, the tallest of all animals

Fig. 389. Ostriches on a South African farm. Plumes are cut from their wings and tails

Fig. 390. Natives carrying thatch

Fig. 391. Train crossing an American steel bridge in South Africa

295. People.—Africa has often been called the *Dark Continent.* One reason is that for many years very little was known about it. Another reason is that most of the native people, except those who live along the Mediterranean Sea, are dark-skinned and belong to the negro or black race. The white people in southern Africa came mostly from Europe. Along the northern coast there are many Europeans, but most of the white people are descendants of Arabians who settled there many hundred years ago.

The home of the black race is central and southern Africa. It was from this region that the negroes of our own and other countries first came. Most of the African natives are still savage and ignorant in spite of efforts made to educate them. They wear little clothing and live in huts made of small poles covered with grass (Fig. 390) or mud. Where there is danger from enemies or wild animals, they build their huts in trees or protect them by a high wall made of posts.

In recent years there has been much progress. This is because several of the nations of Europe have taken possession of a large part of Africa, and are trying to develop their territory. They are building railroads (Fig. 391), working the mines, and stocking the land with cattle.

Review of Sections 290 to 295.—1. Near what other continents is Africa? 2. How is it separated from them?

3. Describe the coast line of Africa. 4. How has this delayed the development of the continent? 5. Where are the mountains of Africa?

6. What makes a great part of Africa unsuitable for white people to live in? 7. Where are the great African forests? Why? 8. Where are the grasslands? 9. What is the Sahara? Where is it? 10. How are the caravans able to cross the great desert?

11. Name four great rivers of Africa. 12. What parts of these rivers are navigable?

13. Name and describe some of the wild animals of Africa.

14. Why is Africa often called the Dark Continent? 15. What parts are occupied by white people? 16. Describe the homes of some of the native people. 17. Why is Africa now making progress?

COUNTRIES OF AFRICA

296. Egypt.—Egypt, in northeastern Africa, is one of the most ancient of the civilized countries of the world. For many centuries it was ruled by its own kings, and was a great and powerful nation. For a time it was part of the Roman empire. Later it was under the government of Turkey, and the people were poor and wretched. Later still it was a British protectorate, and the people were again prosperous. Now it is a kingdom, but under British influence.

Fig. 393. The Assuan Dam across the Nile, Egypt

Most of Egypt is a desert. But the region through which the Nile River flows is fertile, and here the population is gathered. Every year, when the heavy rains fall on the Plateau of Abyssinia and in the region of the upper Nile, the river rises rapidly and floods its lower valley. The muddy water irrigates the fields and covers them with a layer of rich soil.

For thousands of years the Egyptians depended upon this annual flooding of the river to grow their crops. When the British government was in control it greatly improved the methods of irrigation. A dam built at Assuan holds the water of the river in a vast artificial lake (Fig. 393). The stored water is distributed over the fields in ditches whenever it is needed, and in this way more land is irrigated than was possible by the old methods. As it is always warm in Egypt, and as it is easy to control the watering of the fields, it is possible to raise two or three crops a year on the same land (Fig. 394).

Corn, cotton, wheat, and beans are the chief crops. Most of the cotton, like that of India, is sent to English mills for manufacture.

The Nile is navigable for hundreds of miles, and is used both by pleasure craft and by freight boats. The Suez Canal cuts through Egyptian territory, and connects the Red Sea with the Mediterranean. This canal makes it possible for ships from North Atlantic ports to reach ports on the Indian and Pacific oceans without sailing around the southern end of Africa.

Fig. 392. Plowing with a camel and a buffalo, Egypt

F

Fig. 394. Palm trees and field of young wheat in Egypt. The land is level and easily irrigated

Where the Nile enters the Mediterranean, it has built a great delta. At the head of the delta stands *Cairo*, the largest city of Africa. It is an interesting city, with inhabitants from the three continents that border the Mediterranean Sea. The picture (Fig. 395) shows one of the shops in Cairo. Notice how different it is from the stores in our cities. *Alexandria*, on the Mediterranean, is the seaport of Egypt.

Fig. 395. A store in Cairo where Arabian shoes or slippers are sold

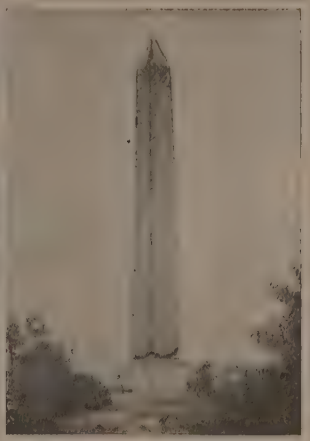

Fig. 396. Obelisk from Egypt, now in the city of New York

Scattered through the country are ruins of temples and pyramids built thousands of years ago when the Egyptians were a powerful nation. The larger pyramids are made of enormous blocks of stone, and it must have taken thousands of men many years to build them. They were burial places of ancient kings.

Tall blocks of stone, called obelisks (Fig. 396), were set up in various places. Obelisks and temple walls are covered with carved picture writings which give the histories of the ancient kings.

297. Other Countries of Northern Africa.—Tripoli, or Libia, as it is now called, borders on the Mediterranean and was under the control of Turkey until it was won in war by the Italians in 1912. *Tripoli*, the chief town and trading post, is on the coast. The southern part of Libia is a desert, but much trade is carried on across it by means of camels. Caravans of traders carry from Tripoli to the Sudan various articles manufactured in Europe and America, and trade them for ivory, skins, and ostrich feathers. These they bring back to Tripoli for export.

Tunis and Algeria are under French control and are prosperous and well-governed countries. Wheat, barley, oats, corn, and tropical fruits are grown. The dates are excellent and furnish a much-prized food. Much of the wheat is sent to France. Camels, horses, sheep, and goats are raised. There are rich mineral deposits, especially in Algeria. *Algiers*, on the Mediterranean, is the chief port and principal city of Algeria. *Tunis* is the leading city of Tunis.

Morocco has a ruler of its own, called the Sultan; but part of the country is controlled by France and part by Spain, as shown by the purple and brown colors on the map (Fig. 386). The people are ignorant, and many of them are wild and cruel. Little of the country is under cultivation, although the northern part could be cultivated. Grain and such tropical fruits as dates, figs, and olives are grown in abundance.

Tangier is the chief city.

Review of Sections 296 and 297.—1. Where is Egypt? 2. Under what government is it now? 3. How is the country irrigated? 4. What crops are grown? 5. Where is the Suez Canal?

6. Where is Cairo? 7. How do the shops differ from our own? 8. Where is Alexandria?

9. What are some of the ancient monuments of Egypt? 10. For what were they used?

11. What European country controls Libia? Tunis and Algeria? 12. What countries control Morocco? 13. What are the chief crops of Tunis and Algeria? 14. Name the chief city in each of these four countries.

Fig. 397. Railroads of Africa

298. Abyssinia.—Abyssinia, in eastern Africa, is a country of mountains and plateaus. The rainfall of this region helps to cause the floods of the Nile River. Agriculture and the raising of cattle, sheep, goats, and mules are the chief industries. There are extensive forests in which there are many trees good for lumber. Some iron is mined and worked into spears, knives, and tools.

299. Sudan Countries.—South of the Sahara, and north of the great forest region of Africa, is the Sudan. It reaches from Abyssinia and the Red Sea to the Atlantic Ocean, and is the home of many negro tribes.

The eastern part of the Sudan is under the control of Great Britain and Egypt. *Khartum* is the capital. A railroad now extends from Cairo some distance south of Khartum. It is part of a line that will finally connect Cairo with Cape Town, near the southern point of Africa (Fig. 397).

Much of the central and western part of the Sudan is under French control. The region along the Gulf of Guinea is divided into colonies controlled by France and Great Britain.

There is some agriculture, and much of the country is used for grazing. The products include ivory, hides, spices, rubber, and gums. These are carried to the ports on the coast, or by caravans across the Sahara to the north.

300. Countries along the Equator.—Two of the large countries of the equatorial forest region are Belgian Congo and French Equatorial Africa. Their names show to what European nations they belong. Uganda, Kenya, and Tanganyika Territory are under British control.

In Kenya and Uganda the lowland products include rice and corn. The products of the highlands include most of the crops of the temperate parts of our own country, such as wheat, oats, barley, potatoes, and corn, as well as many vegetables. Coffee plantations have been set out, and cotton and sugar are also grown. Ostrich farming and sheep farming are profitable. Ivory and hides are exported.

In Tanganyika Territory rubber, ivory, coffee, and copra, the meat of the coconut, are the chief products.

The Belgian Congo produces rubber, palm nuts, and palm oil. Coffee and cacao also are grown. There is a considerable supply of ivory. Valuable deposits of gold and copper have been found.

The products of French Equatorial Africa are almost the same as those of the Belgian Congo.

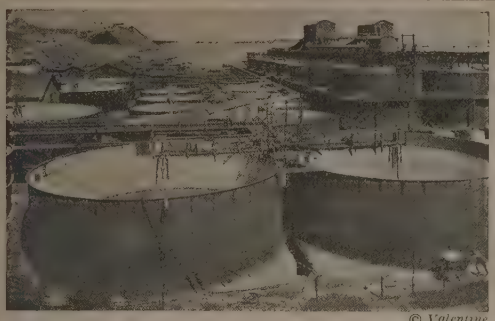

Fig. 398. Works at a gold mine, near Johannesburg

301. Countries of South Africa.—At the present time South Africa is the most prosperous part of the continent. This is because its climate is healthful and also because it has many white settlers. The larger and better portions of South Africa are under the control of Great Britain, although many of the settlers are Dutch. Two colonies (colored green on the map) belong to Portugal (Fig. 386).

The most important divisions of South Africa, where most of the white settlers live, are Cape of Good Hope, Transvaal, Orange Free State, and Natal. These four British provinces form the Union of South Africa, which has a government much like that of Canada. It controls Southwest Africa.

In the east, in the region of heavy rainfall (Fig. 385), wheat and corn are raised. Where the rainfall is slight, grazing is the leading industry.

Other industries in South Africa are the raising of ostriches for their feathers, and mining for gold and diamonds. The Transvaal is the greatest gold-mining region in the world (Fig. 398). The largest diamond mines are at *Kimberley*, in the province of Cape of Good Hope. The manufacturing industries include the making of flour and of leather.

The trade of South Africa is increasing more and more as railroads are built and the country is opened for settlement.

Johannesburg is the center of the gold mines. *Cape Town* is the chief port of South Africa (Fig. 399).

302. The African Islands.—Madagascar, off the southeast coast, is the largest of the African islands. It is a colony of France. The chief industries are agriculture and the raising of cattle. Madagascar exports rubber, cattle, hides, and gold.

The Cape Verde Islands, off the northwest coast (Fig. 409), belong to Portugal, as do also the Madeira Islands farther north. The Canary Islands, off the same coast, belong to Spain.

Review of Sections 298 to 302.—1. What kind of country is Abyssinia? 2. What countries control the Sudan? What are its exports? 3. Where is Khartum? 4. Tell about the Cape-to-Cairo railroad.

5. Name the countries of equatorial Africa. 6. What are their products?

7. To what country does most of South Africa belong? 8. What are the leading industries? 9. Name and describe the chief cities.

10. Where is Madagascar? 11. To what country does it belong? 12. What are its products? 13. Name some of the other African islands. 14. To what countries do they belong?

Fig. 399. Parliament House, Cape Town

Fig. 400

Relief Map

AUSTRALIA AND NEW ZEALAND

Scale of Statute Miles

0 100 200 300 400 500 600

535 MILES TO ONE INCH

Lowlands are shown in green
Higher lands are shown in yellow or buff
Great elevations are shown in purple
Mountain slopes are shaded
Water is shown in blue

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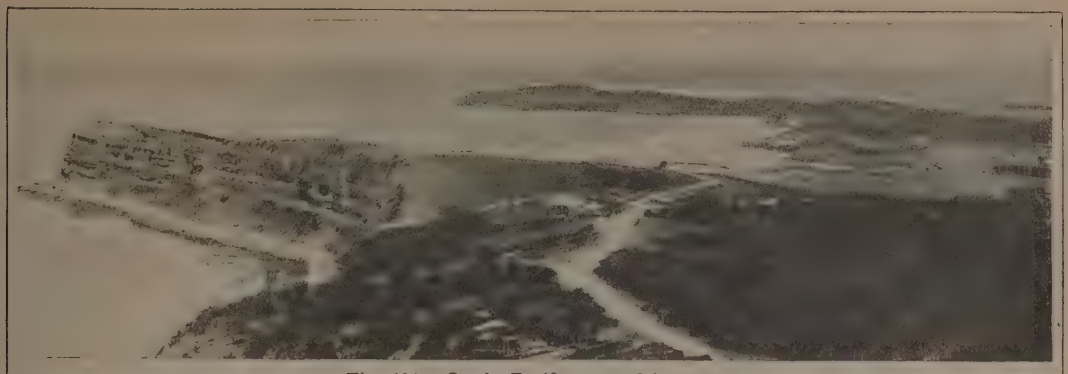

Fig. 401. On the Pacific coast of Australia

AUSTRALIA AND THE ISLANDS OF THE PACIFIC OCEAN

303. Position and Government.—Australia is the smallest of the seven continents. Although it is sometimes called an island, it is so much larger than any other island in the world that it is better called a continent. It is not very much smaller than Europe.

Australia is nearly two thousand miles from Asia, and many thousand miles from Europe or from North America. It lies far south of Asia and is bordered by the Pacific and Indian oceans.

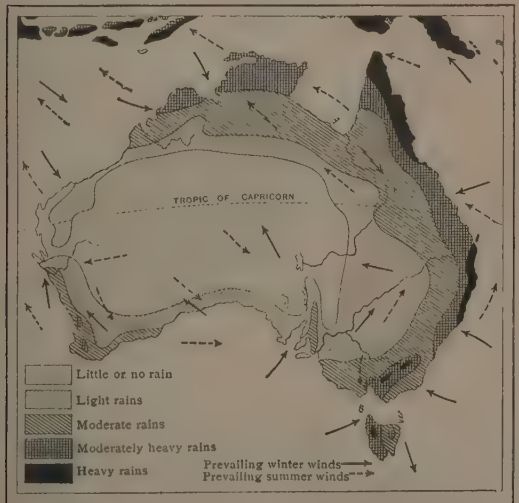

Fig. 402. Rainfall and prevailing winds of Australia

The entire continent belongs to Great Britain. It is divided into a number of self-governing states which, together with the island of Tasmania, form the Commonwealth of Australia. Its government is somewhat like that of Canada.

304. Physical Features.—As the maps (Figs. 400, 403, 406) show, there is only one extensive range of mountains in Australia. This is called the Great Dividing Range. It is in the eastern part and borders the Pacific Ocean.

The continent lies almost wholly in the region of the southeast winds. These winds bring heavy rains to the eastern slope of the mountains (Fig. 402). But after crossing the mountains they reach the interior of the continent as drying winds; and the central part of Australia is a desert.

The maps show a number of rivers, but none of them are large, except the Murray and the Darling.

BISMARCK ARCHIPELAGO
NEW IRELAND
NEW GUINEA
PAPUA
NEW BRITAIN
Mt. Balbe 10,169
Mt. Albert Edward 13,250
SOLOMON ISLANDS
LOUISIADE ARCHIPELAGO
SANTA CRUZ IS.
BORNEO
CELEBES
Makassar Strait
Banda Sea
Java Sea
Sunda Sea
Flores Sea
FLORES I.
TIMOR LAUT
TIMOR
Arafura Sea
Wilhelmina Peak 15,400
Gulf of Papua
Torres Strait
THURSDAY I.
C. York
MELVILLE I.
Cape Coburg Pen.
Timor Sea
Queens Channel
Cambridge Gulf
Arnhem Land
Gulf of Carpentaria
Cape York Peninsula
GREAT BARRIER REEF
Coral Sea
MELANESIA
BANKS IS.
NEW HEBRIDES
INDIAN OCEAN
Roper R.
Victoria R.
Ord R.
C. Leveque
Fitzroy R.
Ashburton Range
Murchison Range
Great Sandy Desert
Macdonnell Range
Flinders R.
Great Dividing Range
PACIFIC OCEAN
NEW CALEDONIA
LOYALTY IS.
Tropic of Capricorn
Sandy C.
AUSTRALIA
Northwest Cape
Ashburton R.
L. Amadeus
Darling Downs
Sharks Bay
Steep Pt.
Great Victoria Desert
Lake Eyre
Cooper Creek
Barcoo R.
Warrego R.
Darling R.
New England Range
Liverpool Range
L. Torrens
Flinders Range
L. Gairdner
Eyre Pen.
Murray R.
Lachlan R.
Blue Mts.
Port Jackson
NORFOLK I.
LORD HOWE I. 2834
Great Australian Bight
Swan R.
Geographe Bay
C. Leeuwin
C. Arid
Spencer Gulf
St. Vincent Gulf
KANGAROO I.
Mt. Kosciusko 7308
C. Howe
Tasman Sea
Great Dividing Range
Port Phillip Bay
Bass Strait
FURNEAUX IS.
Cradle Mt. 5069
TASMANIA
South Cape
NEW ZEALAND
North Cape
NORTH ISLAND
Mt. Ruapehu 9175
East Cape
SOUTH ISLAND
Cook Strait
STEWART I.
South Cape
CHATHAM IS.
Fig. 403
Physical
AUSTRALIA
AND NEW ZEALAND
Scale of Statute Miles
0 100 200 300 400 500 600
535 MILES TO ONE INCH
ELEVATIONS IN FEET
OVER 8000
2000 TO 5000
1000 TO 2000
SEA LEVEL TO 1000
Depths in fathoms
0 to 100
100 to 1000
1000 to 2000
over 2000
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THE MATTHEWS-NORTHRUP WORKS, BUFFALO, N. Y.
100° 110° 120° 130° Longitude East 140° from Greenwich 150° 160° 170° 180°
10° 20° 30° 40°

305. Natives and Native Animals. — When Australia was first settled by white people, they found the country already inhabited by a race of black men. The natives hunted with a curved piece of wood called a boomerang (Fig. 404), and with spears and clubs. The boomerang was their favorite weapon because it could be thrown in such a way that if it failed to hit, it would rise high in the air and glide back to the one who threw it. Some natives are still living in the interior of the continent.

The native animals of Australia are peculiar. Several of them have pouches in their skins in which to carry their young. The most interesting of these animals is the kangaroo. It has long, powerful hind legs and a powerful tail which it uses in leaping over the ground at great speed. The fore legs are short and weak.

306. Australian Industries. — The leading industries of Australia are agriculture, grazing, and mining. Wheat is the chief grain raised, and large amounts are sent to Great Britain.

Where the rainfall is too light for successful agriculture, grazing is carried on. There are great sheep ranches on which are millions of sheep. They furnish vast quantities of wool and mutton that are sent to Great Britain and to other countries.

Large herds of cattle furnish beef, hides, and tallow, as well as dairy products. The dairy products and the meat are sent principally to Great Britain, where they help to feed the large manufacturing population. The meat is carried in refrigerator ships, as is the meat sent from Argentina.

The gold mines of Australia have yielded many million dollars' worth of gold and are still productive. Coal, silver, copper, lead, and tin also are found.

The settled portion of the country is well supplied with railroads. Great steamships sail regularly between Australia and other countries.

Fig. 404. Native with boomerang

Fig. 405. Horse ranch, New South Wales

Political
AUSTRALIA
AND ISLANDS OF THE PACIFIC
Scale of Statute Miles
500 1000 1500
885 MILES TO ONE INCH
Capitals: Commonwealth of Australia ◎ Other Capitals ⊙
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THE MATTHEWS-NORTHRUP WORKS, BUFFALO, N. Y.
CHINA
BRITISH INDIA
Hanoi
Hongkong
FORMOSA
FRENCH INDO-CHINA
HAINAN
Laoag
LUZON
PHILIPPINE ISLANDS
(To U.S.)
Manila
Iloilo
Cebu
PALAWAN
SIAM
Bangkok
Gulf of Siam
Malay Peninsula
South China Sea
Saigon
Sulu Sea
MINDANAO
SULU ARCHIPELAGO
BRUNEI
BORNEO
(British)
SARAWAK
Celebes Sea
Kuching
Achin
FEDERATED MALAY STATES
Singapore
SUMATRA
BORNEO
Palembang
Banjermasin
Batavia
Samarang
Surabaya
Surakarta
Java Sea
Sunda Strait
Malacca Strait
Strait of Malacca
Molukka Passage
MOLUKKA IS.
CELEBES
EAST INDIES
(Dutch)
Banda Sea
TIMOR
Arafura Sea
Port Darwin
Darwin
Gulf of Carpentaria
Torres Strait
Port Moresby
Cape York
GREAT BARRIER REEF
Coral Sea
NEW GUINEA
(Port.)
(To Com. of Aus.)
BISMARCK ARCHIPELAGO
SOLOMON ISLANDS
(British)
NEW HEBRIDES
(Jointly by the British and French)
NEW CALEDONIA
(French)
LOYALTY ISLANDS
(French)
Noumea
Suva
FIJI
(British)
SANTA CRUZ IS.
(British)
ELLICE ISLANDS
(British)
UNION ISLANDS
(British)
SAMOA
SAVAII
(To N.Zea.)
Apia
TUTUILA
(To U.S.)
UPOLU
TONGA OR FRIENDLY IS.
(British)
COOK ISLANDS
(British)
SOCIETY ISLANDS
Tahiti
(To France)
AUSTRAL ISLANDS
(French)
PHŒNIX ISLANDS
(British)
FANNING I.
(British)
CHRISTMAS I.
(British)
PALMYRA I.
(British)
BAKER I.
HOWLAND I.
(To U.S.)
GILBERT ISLANDS
(British)
MARSHALL ISLANDS
(Jap.)
JALUIT
WAKE I.
(To U.S.)
MIDWAY I.
TERRITORY OF HAWAII
(To U.S.)
Honolulu
HAWAII
MARIANAS
(Jap.)
GUAM I.
(To U.S.)
YAP
PELEW IS.
(Jap.)
CAROLINE ISLANDS
(Japanese)
MICRONESIA
MELANESIA
POLYNESIA
PACIFIC OCEAN
INDIAN OCEAN
AUSTRALIA
NORTHERN TERRITORY
QUEENSLAND
WESTERN AUSTRALIA
SOUTH AUSTRALIA
NEW SOUTH WALES
VICTORIA
TASMANIA
Great Sandy Desert
Great Victoria Desert
Great Australian Bight
Northwest Cape
Cape Leeuwin
Perth
Fremantle
Albany
Adelaide
Port Augusta
Murray R.
Darling R.
Kimberley
Murchison R.
Sandy Cape
Rockhampton
Brisbane
Newcastle
Sydney
Canberra
Federal Capital Territory
Melbourne
Ballarat
Bass Strait
Hobart
Tropic of Cancer
Tropic of Capricorn
Equator
NORFOLK I.
(British)
KERMADEC IS.
(British)
Tasman Sea
North Cape
East Cape
Auckland
NORTH ISLAND
NEW ZEALAND
Wellington
Cook Strait
SOUTH ISLAND
Christchurch
Dunedin
CHATHAM IS.
(British)
STEWART I.
South Cape
70° 80° 90° 100° 110° 120° 130° Longitude 140° East 150° from 160° Greenwich 170° 180° 170° Longitude 160° West 150° from 140° Greenwich

Fig. 406

250

Fig. 407. Railroad station, Melbourne

Melbourne is the capital of Victoria (Fig. 407). *Sydney* is the capital of New South Wales (Fig. 408), and *Adelaide* is the capital of South Australia. All three cities are seaports. *Canberra* is the capital of the Commonwealth of Australia.

South of Australia is the island of Tasmania, a grazing and agricultural state. *Hobart* is the principal city.

307. New Zealand.—New Zealand is a group of islands a thousand miles east of Australia. The surface is mountainous, and the scenery is wondrously beautiful and grand. Some of the mountains are covered with perpetual snow, and great glaciers creep down their sides. Some peaks are of volcanic origin, and there are geysers and hot springs. New Zealand has an abundance of rain and many rivers. Agriculture and grazing are the leading industries. This country is a colony of the British Empire.

Auckland is the chief city and port.

308. Islands of the Pacific Ocean.—Near Australia, in the southwestern part of the Pacific Ocean, are thousands of islands. They vary greatly in size. Many are small, but a few are large. Many of them have been built up by volcanic action. Some of the smaller islands are important chiefly as coaling stations. The map (Fig. 406) shows the countries to which the more important islands belong. The largest of these islands is New Guinea, north of Australia. To what countries does it belong?

Review of Sections 303 to 308.—1. How does Australia rank in size among the continents? 2. Compare it with Europe as to size. 3. To what country does it belong?

4. Where is the chief mountain range of Australia? 5. How does this range affect the climate of the interior?

6. Tell about the native people of Australia. 7. Describe the kangaroo.

8. What are the leading industries of Australia? 9. Where do many of the products go? 10. Where are Melbourne, Sydney, and Adelaide? 11. Where is Tasmania?

12. Name the wonders of New Zealand. 13. What nations own islands near Australia?

Fig. 408. Wharves at Sydney

ARCTIC OCEAN
GREENLAND
Baffin Bay
Upernivik
BAFFIN ISLAND
Davis Strait
Pt. Barrow
Beaufort Sea
Mackenzie R.
ALASKA
ASIA
Yukon R.
Nome
St. Michael
Fairbanks
Valdez
Dawson
White Horse
Skagway
Sitka
Bering Sea
Gulf of Alaska
ALEUTIAN ISLANDS
Hudson Bay
C. Farewell
DOMINION OF CANADA
NORTH AMERICA
Vancouver
Winnipeg
Montreal
Seattle
Portland
Chicago
Boston
New York
Philadelphia
Washington
St. Louis
Denver
C. Mendocino
San Francisco
UNITED STATES
New Orleans
MEXICO
Mexico
Havana
CUBA
Vera Cruz
Salina Cruz
Panama
Panama Canal
Caribbean Sea
Gulf of Mexico
PACIFIC OCEAN
HAWAII (U.S.)
MIDWAY I.
FANNING I.
SAMOA IS
TAHITI
International Date Line
Godthab
Reykjavik
ICELAND
Jacobshavn
C. Farewell
NEWFOUNDLAND
Halifax
C. Race
BERMUDA
AZORES
MADEIRA IS.
CANARY IS.
PORTO RICO (U.S.)
Caracas
Georgetown
Paramaribo
Cayenne
C. VERDE IS.
Bathurst
Freetown
Monrovia
Dakar
Bogota
Quito
Lima
La Paz
Para
Pernambuco
Bahia
C. St. Roque
ASCENSION I.
ST. HELENA
Asuncion
Rio de Janeiro
Valparaiso
Buenos Aires
Montevideo
Punta Arenas
C. Horn
FALKLAND IS.
SOUTH AMERICA
ATLANTIC OCEAN
BRITISH ISLES
Glasgow
Liverpool
Dublin
London
Amsterdam
Brussels
Paris
Hamburg
Berlin
Oslo
Stockholm
Copenhagen
Trondhjem
Narvik
North Cape
Archangel
Leningrad
Moscow
RUSSIA
EUROPE
Baltic Sea
Vienna
Odessa
Danube R.
Black Sea
Caspian Sea
Constantinople
Marseille
Madrid
Rome
Lisbon
Tangier
Algiers
Tunis
Mediterranean Sea
Tripoli
Benghazi
Alexandria
Cairo
Port Said
Suez
Khiva
Tashkent
Omsk
Tomsk
Irkutsk
SIBERIA
Yenisei R.
Lena R.
Arctic Circle
Okhotsk Sea
Nikolaiefsk
Amur R.
Harbin
Vladivostok
Mukden
Peking
Port Arthur
Yellow Sea
CHINA
Nagasaki
Yokohama
JAPAN
Tokyo
Shanghai
Canton
Hongkong
Tropic of Cancer
PACIFIC OCEAN
Teheran
Bushire
Karachi
Delhi
Calcutta
Bombay
Rangoon
INDIA
ARABIA
Maskat
Aden
Arabian Sea
Sinkat
Khartum
Kuka
Timbuktu
Niger R.
SAHARA
AFRICA
Abyssinia
Harar
Berbera
C. Guardafui
Madras
Bay of Bengal
Colombo
CEYLON
Manila
Cavite
PHILIPPINE ISLANDS (U.S.)
GUAM (U.S.)
CELEBES
SUMATRA
Singapore
BORNEO
Batavia
EAST INDIES
JAVA
Equator
Palmerston
NEW GUINEA
OCEANICA
Cooktown
FIJI IS.
NEW CALEDONIA
NORFOLK
Brisbane
AUSTRALIA
Perth
Adelaide
Albany
Melbourne
Sydney
Auckland
TASMANIA
Hobart
Wellington
NEW ZEALAND
Tropic of Capricorn
INDIAN OCEAN
Mozambique
Salisbury
Beira
Lourenco Marques
Johannesburg
Kimberley
Durban
Port Elizabeth
Cape Town
C. of Good Hope
Zanzibar
Mombasa
Banana
Loanda
Duala
Mojanga
Tamatave
MADAGASCAR
SEYCHELLES
Commercially developed Regions
Regions partly developed commercially or capable of development
Regions unsuited for commercial development
THE WORLD
PRINCIPAL TRANSPORTATION LINES AND COMMERCIAL DEVELOPMENT
0 1000 2000 3000 4000 5000
SCALE ALONG THE EQUATOR STATUTE MILES
Principal Railroad Lines
Principal Steamship Lines
Submarine and Overland Telegraph Lines
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180° 150° 120° Longitude 90° West from 60° Greenwich 30° 0° 30° Longitude 60° East from 90° Greenwich 120° 150° 180°

Fig. 109.

COMMERCE OF OUR COUNTRY

309. The Need of Commerce.—When we began the study of Geography, we learned that all mankind must have food to eat, clothing to wear, and homes in which to live. We have now learned about all the larger and more important parts of the world. We have found that a part of our food, and some of the materials used in our clothing and in buildings, come from distant countries. How do these things get into our markets? Read again Section 46.

310. Domestic Commerce.—Commerce between the different parts of a country is called *domestic commerce*, and in the United States it is of great importance. Figure 147 shows the railroads and Figure 410 the chief canals and navigable rivers of our country that are used in this domestic commerce. In addition, there is an enormous commerce on the Great Lakes and along our coasts from port to port.

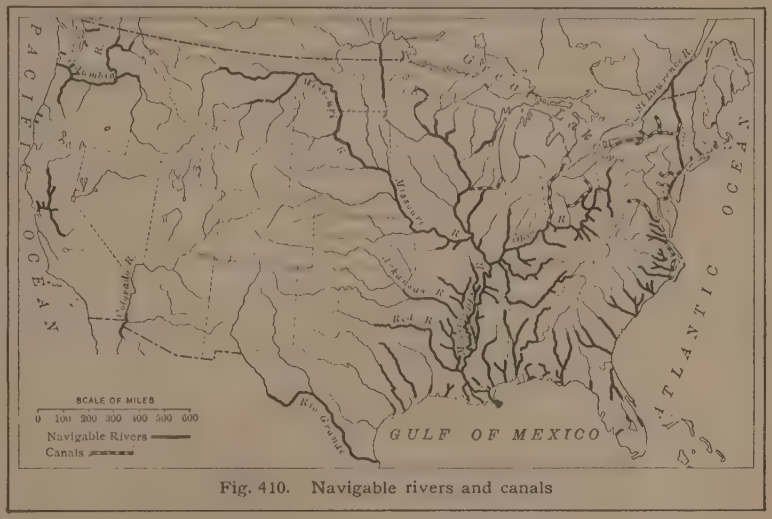

Fig. 410. Navigable rivers and canals

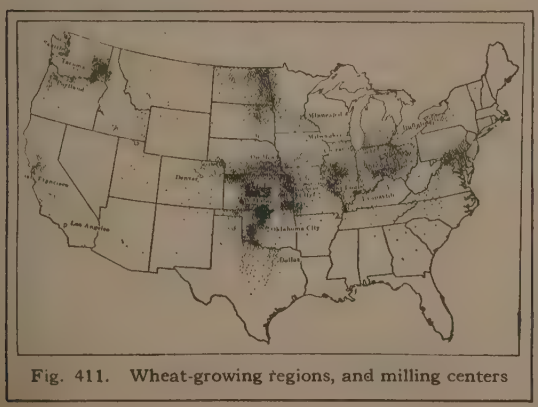

Fig. 411. Wheat-growing regions, and milling centers

One reason for our great domestic commerce is that our country is so large. It has many different kinds of soil and climate and minerals, and therefore a great variety of productions. The people in each region produce the things that can be most easily grown or made there, and depend on commerce to supply their other needs.

Wheat raised in the fields of the North Central States and elsewhere is carried to Minneapolis, Chicago, Buffalo, or some other milling center, to be made into flour (Fig. 411). From these cities the flour is sent to all parts of the country.

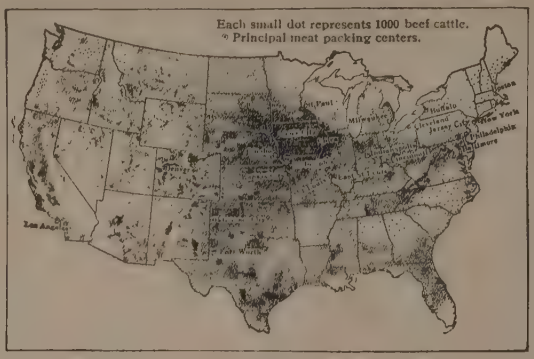

Fig. 412. Cattle raising and meat packing

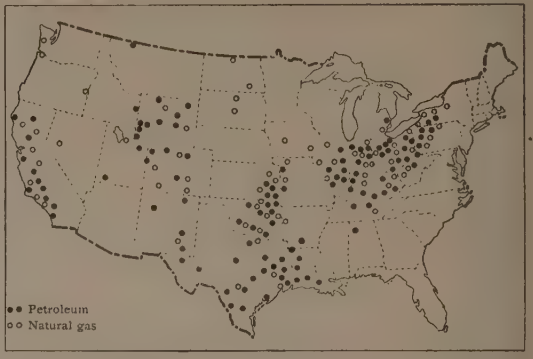

Fig. 414. Regions producing petroleum and natural gas

Cattle raised on the Great Plains are fattened and sent to Omaha, Kansas City, Chicago, and other centers to be slaughtered (Fig 412). The meat is then packed and sent to many cities, and sold for use as food.

There is enough cotton grown in the plantations of our southern states to keep busy the mills of both the South and the North. In these mills many varieties of cloth are made, which are sent to all parts of the country to be sold (Fig. 413).

The wool and hides from the sheep and cattle of western ranches are made into clothing and shoes in the factories of our northern states.

Coal and petroleum and natural gas (Figs. 179, 414) are carried to many parts of the country, to be used for heat or power in homes and factories, or to run steamships and railroad trains. The trees of our forests are cut and sawed into lumber and sent to distant states, to be used in building and in the manufacture of furniture and other articles (Fig. 415).

From our iron mines (Fig. 416), ore is taken to smelters and steel mills in Chicago, Pittsburgh, Birmingham, Cleveland, and other cities to be made into machinery, building iron, engines, and rails. Mines of gold, silver, copper, lead, and zinc furnish other metals for use in our industries.

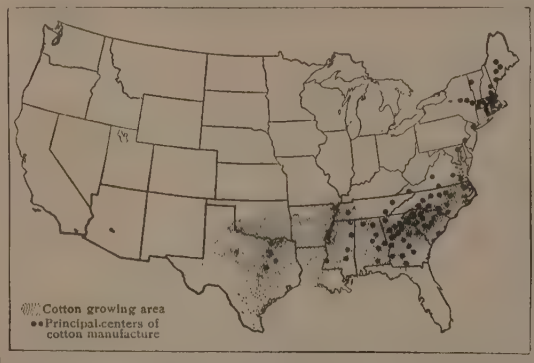

Fig. 413. Cotton growing and cotton manufacturing

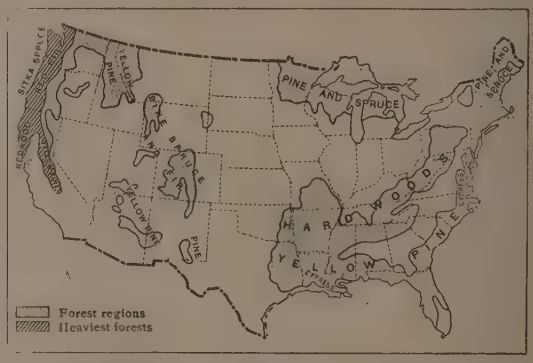

Fig. 415. Lumber-producing regions

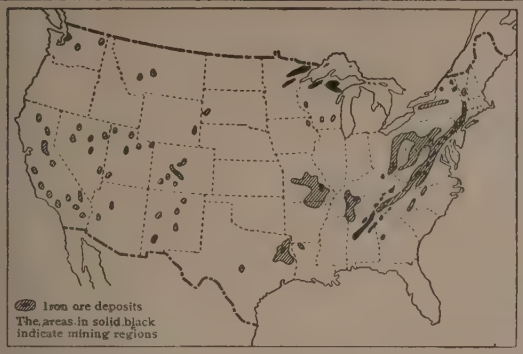

Fig. 416. Iron-mining regions

Fig. 417. Manufacturing regions

The transportation of all these products gives work to thousands of men on railroads and steamships. The manufacturing of the raw materials in great mills and factories has led to the growth of large cities. In the cities, millions of people work in the mills, and millions more are engaged in supplying the needs of the mill workers and others. Figure 417 shows the great manufacturing section of our country and some of the smaller manufacturing regions.

Many of the larger cities, such as New York, Chicago, Philadelphia, Boston, St. Louis, Galveston, and New Orleans, are especially important as trade centers. To them raw materials and manufactured goods from our own country and other countries are sent (Figs. 418, 419). The raw materials may come from the rural districts and the smaller towns near these cities, or from more distant places. The manufactured goods are distributed to places far and near.

Fig. 418. Docks where goods are unloaded from ships

Fig. 419. Freight yard

311. Foreign Commerce.—Our trade with other parts of the world is called *foreign commerce*. Europe alone takes more than three fourths of our exports. The greater part of this trade is with Great Britain, France, Germany, Belgium, and the Netherlands.

On our own continent we carry on much foreign trade with Canada and Mexico. We also have a large trade with Japan and China in Asia, and with Brazil, Argentina, and Chile, in South America. There is some trade direct with Australia and to a smaller extent with Africa.

To these foreign countries we send breadstuffs, including wheat, corn, and flour; raw cotton for manufacture; and such manufactured articles as cotton goods, iron and steel and copper goods, and mineral oils. (Table 4, page 260.)

Our imports include articles of food, raw materials for manufacture, and manufactured goods. From the West Indies, Mexico, and South America we import sugar, coffee, cacao, crude rubber, wool, and hides. From Japan, China, and India we get tea and raw silk, and from other Asiatic countries, beautiful rugs and carpets. From Australia we get wool and hides.

More than half of our total imports, however, come from European countries. These imports consist largely of manufactured goods, such as fine woolens, silks, linen goods, ribbons, gloves, laces, and jewelry.

Figure 409 shows the chief seaports of the world, and the important ocean routes followed by ships trading between our own and other countries.

Fig. 420. Docks in Brooklyn, New York, where goods are received from abroad and where goods from this country are shipped abroad. In the background are many large warehouses where goods are stored

A SHORT LIST OF USEFUL REFERENCES

The reference readings listed below deal in a fuller way with topics discussed in the textbook itself. Many of the books referred to can be read by the children; others are suitable for reading to them. Page references are not given, as the index or chapter headings in each book make this unnecessary.

The following abbreviations are used: American Book Company, New York (A. B. C.); D. Appleton and Company, New York (D. Ap.); E. P. Dutton & Company, New York (Dut.); Educational Publishing Company, New York (E. P. Co.); A. Flanagan Company, Chicago (Flan.); Ginn and Company, Boston (Ginn); Harper & Brothers, New York (Harp.); D. C. Heath & Co., Boston (Heath); Orange Judd Company, New York (Judd); Lothrop, Lee & Shepard, Boston (L. & S.); The Macmillan Company, New York (Mac.); Rand McNally & Company, Chicago (R. McN.); Silver, Burdett and Company, New York (S. B.).

General.—"National Geographic Magazine," a monthly published by the National Geographic Society, Washington, D.C. Each number contains brief articles and many beautiful pictures.

Sections 1–5. Food, Clothing, and Shelter.—Carpenter's "How the World is Fed," "How the World is Clothed," and "How the World is Housed" (A. B. C.). Chamberlain's "How We are Fed," "How We are Clothed," and "How We are Sheltered" (Mac.). "How the World is Fed" (National Geographic Magazine, Volume XXIX, Number One).

6–9. Life in Other Lands.—Shaw's "Big People and Little People of Other Lands" (A. B. C.). Starr's "Strange Peoples" (Heath). Youth's Companion Series—"Strange Lands Near Home" (Ginn). Smith's "Eskimo Stories" (R. McN.). Andrews's "Seven Little Sisters" (Ginn). Carpenter's "Around the World with the Children" (A. B. C.).

10–45. The Great Industries.—Payne's "Geographical Nature Studies" (A. B. C.). Long's "Home Geography" (A. B. C.). Fairbanks's "Home Geography for Primary Grades" (E. P. Co.). Rocheleau's Great American Industries—"Products of the Soil," "Minerals," and "Manufactures" (Flan.). Chase and Clow's "Stories of Industry," Vol. I and Vol. II (E. P. Co.). Youth's Companion Series—"Industries of Today" (Ginn). Buffum and Deaver's "Sixty Lessons in Agriculture" (A. B. C.). Mann's "Beginnings in Agriculture" (Mac.). Roth's "First Book of Forestry" (Ginn). Frye's "Brooks and Brook Basins" (Ginn).

46–54. Commerce. — Chamberlain's "How We Travel" (Mac.). Rocheleau's Great American Industries — "Transportation" (Flan.). Brigham's "From Trail to Railway through the Appalachians" (Ginn). Dutton's "Trading and Exploring" (A. B. C.). Payne's "Geographical Nature Studies" (A. B. C.). Andrews's "Stories Mother Nature Told her Children" (Ginn). Warman's "Story of the Railroad" (D. Ap.). Braine's "Merchant Ships and What They Bring Us" (Dut.).

55–60. The Atmosphere. — Long's "Home Geography" (A. B. C.). Payne's "Geographical Nature Studies" (A. B. C.). Fairbanks's "Home Geography for Primary Grades" (E. P. Co.). Frye's "Brooks and Brook Basins" (Ginn). Murche's "Science Reader," Book III (Mac.).

61–65. Government.—Marriott's "Uncle Sam's Business" (Harp.). Payne's "Geographical Nature Studies" (A. B. C.). Dunn's "Community and the Citizen" (Heath).

66–83. The Earth as a Whole. — Lucia's "Stories of American Discoverers for Little Americans" (A. B. C.). Shaw's "Discoverers and Explorers" (A. B. C.). Dunton's "Glimpses of the World" (S. B.). Fairbanks's "Home Geography for Primary Grades" (E. P. Co.). Long's "Home Geography" (A. B. C.).

84–95. North America and the United States. — Carpenter's Geographical Reader "North America" (A. B. C.). Chamberlain and Chamberlain's "North America" (Mac.). Blaich's "Three Industrial Nations" (A. B. C.). Allen's Geographical and Industrial Studies — "The United States" (Ginn). King's "Picturesque Geographical Readers," Second Book (L. & S.). Schwartz's "Five Little Strangers" (A. B. C.). Wilcox's "Great Cities in America" (Mac.). Carpenter's "How the World is Fed," "How the World is Clothed," and "How the World is Housed" (A. B. C.).

96–109. The New England States.—Carpenter's "North America" and other references given for Sections 84–95. Chase and Clow's "Stories of Industry," Vols. I and II (E. P. Co.). Rocheleau's "Minerals" and "Products of the Soil" (Flan.). Kipling's "Captains Courageous" (story of fishing industry) (The Century Co., New York). Cook's "Maple Sugar and the Sugar Bush" (Judd).

110–120. The Middle Atlantic States. — Carpenter's "North America" and other references given for Sections 84–95. Chase and Clow's "Stories of Industry," Vols. I and II (E. P. Co.). Rocheleau's "Minerals" (Flan.). Martin's "Story of a Piece of Coal" (D. Ap.). Tower's "Story of Oil" (D. Ap.). Smith's "Story of Iron and Steel" (D. Ap.).

121–136. The South Atlantic States and South Central States.—Carpenter's "North America" and other references given for Sections 84–95. Rocheleau's "Products of the Soil" (Flan.). Wilkinson's "Story of the Cotton Plant" (D. Ap.). Curtis's "Story of Cotton" (Penn Publishing Company, Philadelphia). Surface's "Story of Sugar" (D. Ap.).

137–144. The North Central States. — Carpenter's "North America" and other references given for Sections 84–95. Rocheleau's "Products of the Soil" (Flan.). Myrick's "Book of Corn" (Judd). Curtiss's "Wheat Culture" (Judd). Edgar's "Story of a Grain of Wheat" (D. Ap.).

145–153. The Plateau States. — Carpenter's "North America" and other references given for Sections 84–95. Chase and Clow's "Stories of Industry," Vol. I (E. P. Co.). Hough's "Story of the Cowboy" (D. Ap.). Shinn's "Story of the Mine" (D. Ap.). Moran's "Kwahu, the Hopi Indian Boy" (A. B. C.).

154–162. The Pacific States. — Carpenter's "North America" and other references given for Sections 84–95. Chase and Clow's "Stories of Industry," Vol. I (E. P. Co.). Mead's "Story of Gold" (D. Ap.). Tower's "Story of Oil" (D. Ap.).

163–169. Outlying Possessions of the United States.—Carpenter's Geographical Reader "Australia, Our Colonies, and Other Islands of the Sea" and "Around the World with the Children" (A. B. C.). Krout's "Alice's Visit to the Hawaiian Islands" (A. B. C.). Dunton's The World and Its People—"Porto Rico," "Hawaii and Its People," "Story of the Philippines" (S. B.). Schwartz's "Five Little Strangers" (A. B. C.). MacClintock's "The Philippines" (A. B. C.).

170–183. The Northern Countries and Southern Countries of North America. — Carpenter's Geographical Reader "North America" (A. B. C.). Chamberlain and Chamberlain's "North America" (Mac.). Lyde's "Geography of North America" (Mac.). Dunton's The World and Its People—"Our American Neighbors" (S. B.). Adams's "Conquest of the Tropics" (Doubleday, Page & Co., New York).

184–192. South America. — Carpenter's Geographical Reader "South America" (A. B. C.). Chamberlain and Chamberlain's "South America" (Mac.). Dunton's The World and Its People—"South American Republics" (S. B.). Boyce's "Illustrated South America" (R. McN.). Keable's "Coffee" (Sir Isaac Pitman and Sons, London).

193–256. Europe. — Carpenter's Geographical Reader "Europe" and "Around the World with the Children" (A. B. C.). Chamberlain and Chamberlain's "Europe" (Mac.). Lyde's "Geography of Europe" and "A Geography of the British Isles" (Mac.). Monroe and Buckbee's "Europe and Its People" (Harp.). Allen's Geographical and Industrial Studies—"Europe" (Ginn). Andrews's "Seven Little Sisters" (Ginn). Youth's Companion Series—"Northern Europe" and "The Wide World" (Ginn). Blaich's "Three Industrial Nations" (A. B. C.).

257–289. Asia. — Carpenter's Geographical Reader "Asia" and "Around the World with the Children" (A. B. C.). Chamberlain and Chamberlain's "Asia" (Mac.). Dunton's The World and Its People—"Life in Asia" (S. B.). Miller's "Little People of Asia" (Dut.). Schwartz's "Five Little Strangers" (A. B. C.). Krout's "Two Girls in China" (A. B. C.). Andrews's "Seven Little Sisters" (Ginn). Starr's "Strange Peoples" (Heath). Youth's Companion Series—"The Wide World," "Toward the Rising Sun," "Under Sunny Skies" (Ginn). Ibbetson's "Tea" (Sir Isaac Pitman and Sons, London).

290–302. Africa. — Carpenter's Geographical Reader "Africa" and "Around the World with the Children" (A. B. C.). Chamberlain and Chamberlain's "Africa" (Mac.). Schwartz's "Five Little Strangers" (A. B. C.). Andrews's "Seven Little Sisters" (Ginn). Dunton's The World and Its People—"Views in Africa" (S. B.). Youth's Companion Series—"Under Sunny Skies" (Ginn). Starr's "Strange Peoples" (Heath).

303–308. Australia and the Islands of the Sea. —Carpenter's Geographical Reader "Australia, Our Colonies, and Other Islands of the Sea" (A. B. C.). Chamberlain and Chamberlain's "Australia" (Mac.). Dunton's The World and Its People—"Australia and the Islands of the Sea" (S. B.).

309–311. Commerce of the United States.—Keller and Bishop's "Commercial and Industrial Geography" (Ginn). Blaich's "Three Industrial Nations" (A. B. C.). Rocheleau's "Geography of Commerce and Industry" (E. P. Co.).

TABLES

1. AREA AND POPULATION OF THE WORLD

SUMMARY

Length of earth's axis (miles)	7,900
Length of equator (miles)	24,900
Earth's Surface (sq. mi.)	**196,900,000**
Pacific Ocean (sq. mi.)	71,000,000
Atlantic Ocean (sq. mi.)	34,000,000
Indian Ocean (sq. mi.)	28,000,000
Arctic Ocean (sq. mi.)	4,000,000
Antarctic Ocean (sq. mi.)	2,700,000
The Sea (sq. mi.)	**139,700,000**

	Sq. Miles	Population
North America	9,392,000	146,126,000
South America	6,856,000	63,850,000
Europe	3,794,000	443,972,000
Asia	17,143,000	895,118,000
Africa	11,514,000	136,272,000
Australia, etc.	3,457,000	8,758,000
Antarctic Cont.	5,000,000	.....
The Land	**57,156,000**	**1,694,096,000**

NORTH AMERICA

United States. (States in Table No. 2)	3,088,519	105,711,000
Alaska	590,884	55,000
Dom. of Canada	3,759,365	8,788,000
Nova Scotia	21,428	524,000
N. Brunswick	27,985	388,000
Prince Edw. I.	2,184	89,000
Quebec	706,834	2,361,000
Ontario	376,722	2,934,000
Manitoba	251,832	610,000
Saskatchewan	251,700	757,000
Alberta	255,285	588,000
Brit. Columbia	355,855	525,000
Territories	1,479,000	12,000
Part Gt. Lakes	30,540	.....
Newf'dland, etc.	49,680	268,000
Newfoundland	42,730	264,000
Labrador	6,950	4,000
Greenland	838,000	14,000
Mexico	767,300	15,503,000
Central America	206,753	5,813,000
Guatemala	43,640	2,100,000
Brit. Honduras	8,600	45,000
Honduras	44,276	637,000
Salvador	8,170	1,501,000
Nicaragua	49,550	638,000
Costa Rica	18,690	468,000
Panama	33,300	401,000
Canal Zone	527	23,000
West Indies	91,400	9,947,000
Cuba	44,000	2,889,000
Haiti, Rep. of	11,070	2,500,000
Dominican Rep.	18,750	897,000
Jamaica	4,840	858,000
Porto Rico	3,435	1,300,000
Bahama Is.	4,400	53,000
Lesser Antilles	4,905	1,450,000
Other islands	112	27,000

SOUTH AMERICA

Brazil	3,300,000	30,645,000
Argentina	1,084,000	8,699,000
Paraguay	100,000	1,050,000
Uruguay	69,000	1,495,000
Chile	293,000	3,755,000
Bolivia	440,000	2,890,000
Peru	440,000	4,586,000
Ecuador	118,000	2,000,000
Colombia	466,000	5,855,000
Venezuela	364,000	2,412,000
Guiana, British	95,000	298,000
Guiana, Dutch	50,000	113,000
Guiana, French	30,500	49,000
Falkland Is., etc.	6,570	3,000

EUROPE

Gr. Britain, etc.	94,350	44,168,000
England	50,850	35,679,000
Wales	7,473	2,207,000
Scotland	30,405	4,882,000
N. Ireland	5,320	1,250,000
Small islands	302	150,000
Irish Free State	27,040	3,140,000
Germany	179,500	59,857,000
Belgium	11,760	7,684,000
Netherlands	12,772	6,841,000
Denmark	16,585	3,289,000
Iceland	39,770	95,000
Norway	124,710	2,646,000
Sweden	172,928	5,904,000
Poland	149,000	27,442,000
Lithuania	25,000	2,300,000
Latvia	24,000	1,503,000
Esthonia	18,500	1,110,000
France	212,822	39,210,000
Spain	192,000	20,784,000
Portugal	34,264	5,546,000
Switzerland	15,956	3,880,000
Italy	123,000	40,120,000
Austria	30,700	6,131,000
Hungary	36,000	7,841,000
Czechoslovakia	54,700	13,596,000
Yugoslavia	95,000	12,017,000
Rumania	116,000	17,393,000
Bulgaria	40,000	4,910,000
Albania	11,000	832,000
Greece	42,000	4,932,000
Turkey in Eur.	10,000	1,800,000
Russia in Eur.	1,716,500	93,782,000
Finland	130,000	3,367,000
Arctic islands	33,500	.....
Other lands	4,215	1,852,000

ASIA

Turkey in Asia	295,000	10,000,000
Syria	80,000	3,000,000
Iraq	140,000	2,850,000
Palestine	9,000	757,000
Hedjaz	140,000	600,000
Oman	75,000	500,000
Other Arabia	945,170	2,203,000
Persia	635,000	9,500,000
Afghanistan	240,900	6,380,000
Nepal	54,000	5,600,000
Indian Empire	1,856,500	319,075,000
Ceylon, etc.	25,500	4,568,000
Straits Settl's, etc.	35,600	2,377,000
Siam	245,000	8,266,000
East Indies	788,000	60,694,000
Philippine Is.	115,000	10,351,000
Java	51,000	35,017,000
Other islands	622,000	15,326,000
French Indo-China, etc.	256,500	17,269,000
China, etc.	4,300,000	320,880,000
China proper	1,497,000	302,340,000
Tibet	814,000	2,000,000
Sinkiang	550,000	2,000,000
Mongolia	1,076,000	1,800,000
Manchuria	363,000	12,740,000
Hongkong	400	625,000
Japanese Empire	261,300	77,606,000
Chosen	84,250	17,284,000
Dairen, etc.	1,200	601,000
Japan	147,750	55,961,000
Other islands	28,100	3,760,000
Russia in Asia	6,721,500	41,037,000
Siberia	4,807,000	11,161,000
Kirghiz in Asia	780,000	4,546,000
Turkestan	570,000	7,202,000
Caucasus region	170,500	11,809,000
Other areas	394,000	6,319,000
Other lands	38,764	1,331,000

AFRICA

Egypt (Including parts of the Sahara)	400,000	13,387,000
Libia (Including parts of the Sahara)	542,000	525,000
Tunis (Including parts of the Sahara)	64,600	2,094,000
Algeria (Including parts of the Sahara)	343,600	5,801,000
Morocco (Including parts of the Sahara)	176,000	5,000,000
Sahara, remaining part	1,944,000	695,000
Abyssinia	312,000	8,000,000
Anglo-Eg.Sudan	1,014,400	3,400,000
Fr. West Africa	704,000	12,284,000
Nigeria, etc.	394,000	17,300,000
Uganda	111,000	3,072,000
Kenya	247,000	2,630,000
Tanganyika Ter.	384,000	4,000,000
Belgian Congo, etc.	947,200	15,400,000
Fr.Equatorial Af.	680,600	10,000,000
Fr. Cameroon	160,000	1,500,000
3 Portug. Col's	799,700	7,570,000
Union of S. Af.	792,340	6,926,000
C. of G. Hope	277,000	2,781,000
Natal	34,710	1,194,000
Or. Free State	48,340	628,000
Transvaal	114,290	2,086,000
S. W. Africa	318,000	237,000
Other Br. S. Af.	722,400	3,724,000
Madagascar	228,600	3,545,000
Cape Verde Is.	1,475	150,000
Madeira Is.	315	170,000
Canary Is.	2,940	521,000
Other lands	541,600	8,619,000

AUSTRALIA, ETC.

Com. of Austr.	2,972,866	5,437,000
Victoria	87,884	1,532,000
New S. Wales	310,660	2,100,000
Queensland	668,497	758,000
South Austr.	380,070	495,000
Western Austr.	975,920	332,000
Tasmania	26,215	214,000
Northern Ter.	523,620	4,000
New Zealand	104,663	1,221,000
New Guinea Gr.	311,000	1,000,000
Other Pacific Is.	68,850	1,100,000

2. THE UNITED STATES

	Sq. Miles	Population, 1920
Alabama	51,998	2,348,174
Arizona	113,956	334,162
Arkansas	53,335	1,752,204
California	158,297	3,426,861
Colorado	103,948	939,629
Connecticut	4,965	1,380,631
Delaware	2,370	223,003
Dist. of Columbia	70	437,571
Florida	58,666	968,470
Georgia	59,265	2,895,832
Idaho	83,888	431,866
Illinois	56,665	6,485,280
Indiana	36,354	2,930,390
Iowa	56,147	2,404,021
Kansas	82,158	1,769,257
Kentucky	40,598	2,416,630
Louisiana	48,506	1,798,509
Maine	33,040	768,014
Maryland	12,327	1,449,661
Massachusetts	8,266	3,852,356
Michigan	57,980	3,668,412
Minnesota	84,682	2,387,125
Mississippi	46,865	1,790,618
Missouri	69,420	3,404,055
Montana	146,997	548,889
Nebraska	77,520	1,296,372
Nevada	110,690	77,407
New Hampshire	9,341	443,083
New Jersey	8,224	3,155,900
New Mexico	122,634	360,350
New York	49,204	10,385,227
North Carolina	54,426	2,559,123
North Dakota	70,837	646,872
Ohio	41,040	5,759,394
Oklahoma	70,057	2,028,283
Oregon	96,699	783,389
Pennsylvania	45,126	8,720,017
Rhode Island	1,248	604,397
South Carolina	30,989	1,683,724
South Dakota	77,615	636,547
Tennessee	42,022	2,337,885
Texas	265,896	4,663,228
Utah	84,990	449,396
Vermont	9,564	352,428
Virginia	42,627	2,309,187
Washington	69,127	1,356,621
West Virginia	24,170	1,463,701
Wisconsin	56,066	2,632,067
Wyoming	97,914	194,402
Part of the Great Lakes	61,730	
Main Body	**3,088,519**	**105,710,620**
Outlying Territory, etc.		
Alaska Territory	590,884	55,036
Hawaii Territory	6,449	255,912
Porto Rico	3,435	1,299,809
Virgin Islands of the United States ('17)	132	26,051
Philippine Is.('18)	115,026	10,350,640
Tutuila, etc.	77	8,056
Guam	210	13,275
Panama Canal Zone	527	22,858
Soldiers and sailors stationed abroad		117,238
Total Outlying	**716,740**	**12,148,875**
Grand Total	**3,805,259**	**117,859,495**

3. STATES LEADING IN THE PRODUCTION OF CERTAIN CROPS

The amount produced of each crop for the country as a whole is 100%. The amount produced by each state, according to the census of 1920, is given as a percentage of the total amount for the country.

Apples: Washington 15.8; New York 10.5; Virginia 6.5; California 5.7; Arkansas 5.2.
Barley: California 18; Minnesota 12.2; South Dakota 10.5; Wisconsin 10; North Dakota 9.9; Kansas 6.8; Iowa 4.4.
Cherries: California 16.6; Michigan 9.1; Oregon 7.7; Washington 6.3.
Corn: Iowa 15.8; Illinois 12.2; Nebraska 6.8; Indiana 6.8; Ohio 6.4; Missouri 6.2; Texas 4.6.
Cotton: Texas 26.1; Georgia 14.8; South Carolina 13; Oklahoma 8.9; Mississippi 8.4; Arkansas 7.6; North Carolina 7.5; Alabama 6.3.
Cottonseed: Texas 27.1; Georgia 14.5; South Carolina 12.6; Oklahoma 8.9; Mississippi 8.4; Arkansas 7.7; North Carolina 7.2; Alabama 6.2.
Grapefruit: Florida 86.4; California 12.7.
Grapes: California 81.7; New York 6.1; Michigan 4.6.
Maple sugar: Vermont 64.5; New York 20.8; Pennsylvania 5.5.
Oats: Iowa 17.7; Illinois 12.2; Minnesota 8.4; Wisconsin 6.5; Texas 6; Nebraska 5.7; Indiana 5.
Oranges: California 77.9; Florida 21.4.
Peaches: California 31.5; Georgia 9.4; Texas 9.1; Arkansas 6.6; Oklahoma 5.8.
Peanuts: Alabama 22.9; Virginia 21.4; North Carolina 21.3; Georgia 14; Texas 10; Florida 5.
Pears: California 27.8; New York 12.8; Washington 12.2; Oregon 5.4.
Plums and prunes: California 69.2; Oregon 11.2; Washington 4.1.
Potatoes: New York 11.2; Minnesota 9.2; Wisconsin 9.1; Maine 8.8; Michigan 8.2; Pennsylvania 7.6; Virginia 4.2.
Rice: Louisiana 45.3; California 19.6; Arkansas 19.2; Texas 12.5.
Rye: North Dakota 21.4; Michigan 16; Minnesota 11; Wisconsin 9; Indiana 6; South Dakota 5.4.
Strawberries: Tennessee 4.04; Missouri 4; Michigan 3.9; Arkansas 3.5
Sugar beets: Colorado 27.7; Michigan 17; Utah 15.5; California 11.1.
Sugar cane: Louisiana 70; Georgia 10.3; Alabama 5.9.
Sweet potatoes: Georgia 13; Alabama 10.2; North Carolina 10.2; Mississippi 8.4; Virginia 7.5; Texas 7.3; South Carolina 6.9; Louisiana 6.8.
Tobacco: Kentucky 36.9; North Carolina 20.4; Tennessee 8.2; Virginia 7.5; South Carolina 5.2; Ohio 4.7; Pennsylvania 4.1.
Wheat: Kansas 15.7; Illinois 7.5; Oklahoma 7; Missouri 6.9; North Dakota 6.5; Ohio 6.1; Nebraska 6.1; Indiana 4.8; Washington 4.4.

4. CHIEF EXPORTS AND IMPORTS OF THE UNITED STATES

With their Value in the Year 1921

Exports		Imports	
Agricultural implements	$37,478,190	Art works	$21,032,004
Animals	17,867,053	Breadstuffs	53,682,562
Automobiles, carriages, cars, and other vehicles	122,221,931	Cacao	23,124,741
Breadstuffs	748,000,027	Chemicals, drugs and dyes	95,603,942
Chemicals, drugs, and medicines	61,111,410	Coffee	142,808,719
Coal and coke	170,982,532	Copper and manufactures of	86,270,661
Copper	89,276,924	Cotton	32,902,193
Cotton	534,241,795	Cotton goods	75,428,323
Cotton goods	117,234,542	Fibers (sisal, hemp, etc.)	33,605,890
Electrical machinery, etc.	95,817,885	Fibers, manufactures of	77,677,004
Fruits and nuts	70,157,327	Fish	29,041,707
Furs and fur skins	14,861,110	Fruits and nuts	80,887,468
Iron and steel and manufactures of iron and steel	607,372,758	Furs and fur skins	40,525,944
Leather	31,787,275	Hides and skins	67,561,015
Leather goods	28,763,737	Iron and steel and manufactures of iron and steel	28,751,729
Meat and dairy products	342,359,146	Meat and dairy products	35,716,301
Oil cake and oil cake meal	24,488,651	Oils of various kinds	120,131,286
Oils, animal and vegetable	28,910,027	Paper and paper goods	92,462,472
Oils, mineral	384,224,512	Precious stones	38,127,649
Paper and paper goods	49,494,822	Crude rubber	75,728,968
Photographic goods	18,931,819	Seeds	34,494,239
Rubber goods	30,786,213	Silk, raw	264,723,439
Sugar and molasses	51,524,536	Silk manufactures	48,248,777
Tobacco and manufactures of tobacco	226,099,793	Sugar	235,490,835
Vegetables	19,451,883	Tin	22,414,884
Wood and articles of wood	90,515,319	Tobacco	54,172,158
		Wood and articles of wood	116,788,687
		Wool	60,481,687
		Wool manufactures	51,218,062

5. POPULATION OF THE UNITED STATES ENGAGED IN GAINFUL OCCUPATIONS, 1920

The Number Engaged in Each Occupation in Each Group of States and in the Whole Country

Occupation	New England States	Middle Atlantic States	South Atlantic States	South Central States	North Central States	Plateau States	Pacific States	Whole United States
Agriculture	204,648	575,726	2,119,867	3,534,795	3,164,951	363,843	396,236	10,359,066
Dairying and grazing	19,513	65,493	8,725	36,346	97,246	51,036	45,519	323,878
Lumbering	22,358	14,775	30,773	36,822	55,168	12,177	45,305	217,378
Mining and quarrying	4,853	343,916	134,221	188,068	290,379	93,064	35,722	1,090,223
Fishing	9,061	4,246	18,073	5,263	5,678	102	10,413	52,836
Manufacturing	1,632,267	3,812,388	1,202,668	1,111,790	4,133,385	227,431	698,595	12,818,524
Trade	329,470	1,074,964	395,864	533,277	1,472,008	123,730	313,666	4,242,979
Transportation	215,191	799,229	324,221	418,330	987,776	111,517	207,318	3,063,582
Professional, domestic, clerical	797,031	2,549,479	1,105,587	1,162,401	2,897,254	272,094	661,936	9,446,782
All occupations	3,234,392	9,240,216	5,339,999	7,027,092	13,103,845	1,254,994	2,413,710	41,614,248

6. POPULATION OF CITIES IN THE UNITED STATES AND ITS DEPENDENCIES

Cities having more than 50,000 People, together with Others Mentioned in the Text.

	Pop. 1920	Pop. 1910		Pop. 1920	Pop. 1910		Pop. 1920	Pop. 1910
Akron, Ohio	208,435	69,067	Haverhill, Mass.	53,884	44,115	Portsmouth, Va.	54,387	33,190
Albany, N.Y.	113,344	100,253	Hoboken, N.J.	68,166	70,324	Providence, R.I.	237,595	224,326
Allentown, Pa.	73,502	51,913	Holyoke, Mass.	60,203	57,730	Pueblo, Colo.	43,050	41,747
Altoona, Pa.	60,331	52,127	Honolulu, Hawaii	83,327	52,183	Racine, Wis.	58,593	38,002
Atlanta, Ga.	200,616	154,839	Houston, Tex.	138,276	78,800	Reading, Pa.	107,784	96,071
Atlantic City, N.J.	50,707	46,150	Huntington, W. Va.	50,177	31,161	Richmond, Va.	171,667	127,628
Augusta, Ga.	52,548	41,040	Indianapolis, Ind.	314,194	233,650	Roanoke, Va.	50,842	34,874
Baltimore, Md.	733,826	558,485	Jacksonville, Fla.	91,558	57,699	Rochester, N.Y.	295,750	218,149
Bayonne, N.J.	76,754	55,545	Jersey City, N.J.	298,103	267,779	Rockford, Ill.	65,651	45,401
Berkeley, Calif.	56,036	40,434	Johnstown, Pa.	67,327	55,482	Sacramento, Calif.	65,908	44,696
Bethlehem, Pa.	50,358	12,837	Kansas City, Kans.	101,177	82,331	Saginaw, Mich.	61,903	50,510
Binghamton, N.Y.	66,800	48,443	Kansas City, Mo.	324,410	248,381	St. Joseph, Mo.	77,939	77,403
Birmingham, Ala.	178,806	132,685	Knoxville, Tenn.	77,818	36,346	St. Louis, Mo.	772,897	687,029
Boston, Mass.	748,060	670,585	Lancaster, Pa.	53,150	47,227	St. Paul, Minn.	234,698	214,744
Bridgeport, Conn.	143,555	102,054	Lansing, Mich.	57,327	31,229	Salt Lake City, Utah	118,110	92,777
Brockton, Mass.	66,254	56,878	Lawrence, Mass.	94,270	85,892	San Antonio, Tex.	161,379	96,614
Buffalo, N.Y.	506,775	423,715	Lincoln, Nebr.	54,948	43,973	San Diego, Calif.	74,683	39,578
Butte, Mont.	41,611	39,165	Little Rock, Ark.	65,142	45,941	San Francisco, Calif.	506,676	416,912
Cambridge, Mass.	109,694	104,839	Long Beach, Calif.	55,593	17,809	San Juan, P.R.	70,707	49,000
Camden, N.J.	116,309	94,538	Los Angeles, Calif.	576,673	319,198	Savannah, Ga.	83,252	65,064
Canton, Ohio	87,091	50,217	Louisville, Ky.	234,891	223,928	Schenectady, N.Y.	88,723	72,826
Charleston, S.C.	67,957	58,833	Lowell, Mass.	112,759	106,294	Scranton, Pa.	137,783	129,867
Chattanooga, Tenn.	57,895	44,604	Lynn, Mass.	99,148	89,336	Seattle, Wash.	315,312	237,194
Chester, Pa.	58,030	38,537	Macon, Ga.	52,995	40,665	Shreveport, La.	43,874	28,015
Chicago, Ill.	2,701,705	2,185,283	Manchester, N.H.	78,384	70,063	Sioux City, Iowa	71,227	47,828
Cincinnati, Ohio	401,247	363,591	Manila, P.I. ('19, '03)	283,613	219,928	Sioux Falls, S. Dak.	25,202	14,094
Cleveland, Ohio	796,841	560,663	Memphis, Tenn.	162,351	131,105	Somerville, Mass.	93,091	77,236
Colorado Spr's, Colo.	30,105	29,078	Meriden, Conn.	29,867	27,265	South Bend, Ind.	70,983	53,684
Columbus, Ohio	237,031	181,511	Meridian, Miss.	23,399	23,285	Spokane, Wash.	104,437	104,402
Covington, Ky.	57,121	53,270	Milwaukee, Wis.	457,147	373,857	Springfield, Ill.	59,183	51,678
Dallas, Tex.	158,976	92,104	Minneapolis, Minn.	380,582	301,408	Springfield, Mass.	129,614	88,926
Davenport, Iowa	56,727	43,028	Mobile, Ala	60,777	51,521	Springfield, Ohio	60,840	46,921
Dayton, Ohio	152,559	116,577	Nashville, Tenn.	118,342	110,364	Superior, Wis.	39,671	40,384
Denver, Colo.	256,491	213,381	Newark, N.J.	414,524	347,469	Syracuse, N.Y.	171,717	137,249
Des Moines, Iowa	126,468	86,368	New Bedford, Mass.	121,217	96,652	Tacoma, Wash.	96,965	83,743
Detroit, Mich.	993,678	465,766	New Britain, Conn.	59,316	43,916	Tampa, Fla.	51,608	37,782
Duluth, Minn.	98,917	78,466	New Haven, Conn.	162,537	133,605	Terre Haute, Ind.	66,083	58,157
East Orange, N.J.	50,710	34,371	New Orleans, La.	387,219	339,075	Toledo, Ohio	243,164	168,497
East St. Louis, Ill.	66,767	58,547	New York, N.Y.	5,620,048	4,766,883	Topeka, Kans.	50,022	43,684
Elizabeth, N.J.	95,783	73,409	Niagara Falls, N.Y.	50,760	30,445	Trenton, N.J.	119,289	96,815
El Paso, Tex.	77,560	39,279	Norfolk, Va.	115,777	67,452	Troy, N.Y.	72,013	76,813
Erie, Pa.	93,372	66,525	Oakland, Calif.	216,261	150,174	Tulsa, Okla.	72,075	18,182
Evansville, Ind.	85,264	69,647	Oklahoma City, Okla.	91,295	64,205	Utica, N.Y.	94,156	74,419
Fall River, Mass.	120,485	119,295	Omaha, Nebr.	191,601	124,096	Washington, D.C.	437,571	331,069
Fargo, N. Dak.	21,961	14,331	Passaic, N.J.	63,841	54,773	Waterbury, Conn.	91,715	73,141
Flint, Mich.	91,599	38,550	Paterson, N.J.	135,875	125,600	Wheeling, W. Va.	56,208	41,641
Fort Wayne, Ind.	86,549	63,933	Pawtucket, R.I.	64,248	51,622	Wichita, Kans.	72,217	52,450
Fort Worth, Tex.	106,482	73,312	Peoria, Ill.	76,121	66,950	Wilkes-Barre, Pa.	73,833	67,105
Galveston, Tex.	44,255	36,981	Philadelphia, Pa.	1,823,779	1,549,008	Wilmington, Del.	110,168	87,411
Gary, Ind.	55,378	16,802	Phoenix, Ariz.	29,053	11,134	Wilmington, N.C.	33,372	25,748
Grand Rapids, Mich.	137,634	112,571	Pittsburgh, Pa.	588,343	533,905	Worcester, Mass.	179,754	145,986
Harrisburg, Pa.	75,917	64,186	Portland, Maine	69,272	58,571	Yonkers, N.Y.	100,176	79,803
Hartford, Conn.	138,036	98,915	Portland, Oregon	258,288	207,214	Youngstown, Ohio	132,358	79,066

7. POPULATION OF CITIES IN FOREIGN COUNTRIES

Cities Having more than 500,000 People, together with Others Mentioned in the Text

Adelaide, Australia	261,000	('21)	Geneva, Switzerland	135,000	('20)	Osaka, Japan	1,253,000	('20)
Alexandria, Egypt	445,000	('17)	Genoa, Italy	301,000	('21)	Oslo, Norway	258,000	('20)
Algiers, Algeria	207,000	('21)	Glasgow, Scotland	1,034,000	('21)	Ottawa, Canada	108,000	('21)
Amiens, France	93,000	('21)	Göteborg, Sweden	227,000	('22)	Panama, Panama	67,000	('20)
Amsterdam, Neth.	647,000	('20)	Guatemala, Guatemala	91,000	('21)	Para, Brazil	236,000	('20)
Antwerp, Belgium	304,000	('21)	Guayaquil, Ecuador	100,000	('19)	Paris, France	2,906,000	('21)
Archangel, Russia	45,000	('21)	Hague, Netherlands	355,000	('19)	Peking, China	1,300,000	('21)
Asuncion, Paraguay	100,000	('20)	Halifax, Canada	58,000	('21)	Pernambuco, Brazil	239,000	('20)
Athens, Greece	293,000	('20)	Hamburg, Germany	986,000	('19)	Prague, Czechoslovakia	676,000	('21)
Auckland, New Zealand	164,000	('22)	Hangchow, China	892,000	('21)	Quebec, Canada	95,000	('21)
Bahia, Brazil	283,000	('20)	Hankow, China	1,468,000	('20)	Quito, Ecuador	81,000	('19)
Baku, Azerbaijan	263,000	('21)	Havana, Cuba	364,000	('20)	Riga, Latvia	185,000	('20)
Bangkok, Siam	630,000	('20)	Havre, France	163,000	('21)	Rio de Janeiro, Brazil	1,158,000	('20)
Barcelona, Spain	710,000	('20)	Helsingfors, Finland	198,000	('20)	Rome, Italy	691,000	('21)
Barranquilla, Colombia	65,000	('21)	Hobart, Tasmania	52,000	('21)	Rotterdam, Neth.	516,000	('20)
Basel, Switzerland	136,000	('20)	Hyderabad, India	404,000	('21)	Rouen, France	124,000	('21)
Batavia, Java	139,000	('20)	Iquique, Chile	37,000	('20)	St. Etienne, France	168,000	('21)
Beirut, Syria	80,000		Irkutsk, Siberia	104,000	('21)	St. John, Canada	47,000	('21)
Belfast, Ireland	425,000	('22)	Jerusalem, Palestine	63,000	('22)	St. Johns, Newfoundland	34,000	('18)
Belgrade, Yugoslavia	120,000	('19)	Johannesburg, S. Af.	284,000	('21)	Salonica, Greece	170,000	('20)
Benares, India	198,000	('21)	Khartum, Ang.-Eg. Sud.	31,000		Santiago, Chile	507,000	('20)
Bergen, Norway	91,000	('20)	Kief, Russia	366,000	('21)	Santos, Brazil	103,000	('20)
Berlin, Germany	3,804,000	('19)	Kimberley, S. Africa	39,000	('21)	São Paulo, Brazil	579,000	('20)
Bern, Switzerland	105,000	('20)	Kingston, Jamaica	63,000	('21)	Sebastopol, Russia	73,000	('21)
Birmingham, England	919,000	('21)	Kobe, Japan	609,000	('20)	Seoul, Chosen	250,000	('20)
Bogota, Colombia	160,000	('21)	Kyoto, Japan	591,000	('20)	Shanghai, China	1,500,000	('21)
Bombay, India	1,174,000	('21)	La Paz, Bolivia	107,000	('18)	Sheffield, England	491,000	('21)
Bordeaux, France	267,000	('21)	Lassa, Tibet	20,000		Singapore, Straits Set.	387,000	('19)
Bremen, Germany	270,000	('19)	Leeds, England	458,000	('21)	Sofia, Bulgaria	154,000	('20)
Breslau, Germany	528,000	('19)	Leipzig, Germany	604,000	('19)	Soochow, China	500,000	('21)
Brussels, Belgium	775,000	('21)	Leningrad, Russia	1,067,000	('23)	Stettin, Germany	233,000	('19)
Bucharest, Rumania	309,000	('17)	Liege, Belgium	165,000	('21)	Stockholm, Sweden	422,000	('22)
Budapest, Hungary	1,185,000	('21)	Lima, Peru	176,000	('20)	Sydney, Australia	898,000	('21)
Buenos Aires, Argent.	1,720,000	('22)	Lisbon, Portugal	490,000	('20)	Tangier, Morocco	50,000	('21)
Cairo, Egypt	791,000	('17)	Liverpool, England	803,000	('21)	Teheran, Persia	220,000	
Calais, France	73,000	('21)	Lodz, Poland	452,000	('21)	Tientsin, China	800,000	('21)
Calcutta, India	1,328,000	('21)	London, England	7,476,000	('21)	Tiflis, Georgia	347,000	('15)
Callao, Peru	53,000	('20)	Lyon, France	562,000	('21)	Tokyo, Japan	2,173,000	('20)
Canton, China	900,000	('21)	Madras, India	527,000	('21)	Tomsk, Siberia	119,000	('21)
Cape Town, S. Africa	207,000	('21)	Madrid, Spain	751,000	('20)	Toronto, Canada	522,000	('21)
Caracas, Venezuela	92,000	('20)	Manaos, Brazil	76,000	('20)	Trieste, Italy	239,000	('21)
Changsha, China	536,000	('21)	Manchester, England	731,000	('21)	Tripoli, Libia	73,000	
Cologne, Germany	634,000	('19)	Maracaibo, Venezuela	47,000	('20)	Tunis, Tunis	172,000	('21)
Colombo, Ceylon	244,000	('21)	Marseille, France	586,000	('21)	Turin, Italy	502,000	('21)
Constantinople, Turk.	1,000,000		Mekka, Hedjaz	70,000		Valencia, Spain	244,000	('20)
Copenhagen, Denmark	561,000	('16)	Melbourne, Australia	795,000	('21)	Valparaiso, Chile	182,000	('20)
Dairen, Manchuria	239,000	('20)	Mexico, Mexico	1,080,000	('10)	Vancouver, Canada	117,009	('21)
Damascus, Syria	170,000		Milan, Italy	718,000	('21)	Venice, Italy	172,000	('21)
Danzig, Danzig	195,000	('23)	Montevideo, Uruguay	351,000	('22)	Vera Cruz, Mexico	49,000	('10)
Delhi, India	304,000	('21)	Montreal, Canada	619,000	('21)	Vienna, Austria	1,841,000	('20)
Dresden, Germany	529,000	('19)	Moscow, Russia	1,028,000	('21)	Vladivostok, Siberia	90,000	
Dublin, Ireland	427,000	('22)	Munich, Germany	631,000	('19)	Warsaw, Poland	931,000	('21)
Essen, Germany	439,000	('19)	Naples, Italy	780,000	('21)	Winnipeg, Canada	179,000	('21)
Florence, Italy	254,000	('21)	Odessa, Russia	432,000	('21)	Yokohama, Japan	423,000	('20)
Foochow, China	320,000	('21)	Oporto, Portugal	203,000	('20)	Zurich, Switzerland	207,000	('20)

8. GREAT RIVERS AND THEIR BASINS

River	Area of Basin, Sq. Miles	Longest Stream, Miles	River	Area of Basin, Sq. Miles	Longest Stream, Miles	River	Area of Basin, Sq. Miles	Longest Stream, Miles
Amazon	2,320,000	3,500	Lena	900,000	2,800	Plata	1,150,000	2,500
Amur	780,000	2,700	Mackenzie	680,000	2,100	Po	27,000	460
Colorado	230,000	1,000	Magdalena	90,000	1,100	Rhine	63,000	709
Colombia	290,000	1,400	Mekong	280,000	2,600	Rhone	38,000	447
Congo	1,500,000	2,800	Mississippi-Missouri	1,250,000	4,200	Rio Grande	230,000	1,800
Danube	320,000	1,800	Murray	350,000	1,100	St. Lawrence	565,000	2,100
Dnieper	197,000	1,300	Nelson-Saskatchewan	470,000	1,900	São Francisco	210,000	1,800
Euphrates	490,000	2,000	Niger	1,000,000	2,600	Volga	590,000	2,300
Ganges-Brahmaputra	600,000	1,800	Nile	1,300,000	3,700	Yangtze	690,000	3,100
Hwang	390,000	2,800	Ob	1,100,000	3,000	Yenisei	1,500,000	3,000
Indus	360,000	1,900	Orange	270,000	1,200	Yukon	380,000	1,865
Irrawaddy	180,000	1,200	Orinoco	425,000	1,500	Zambezi	580,000	2,200

INDEX AND PRONUNCIATIONS

MARKINGS: **ā** in **lāte**, **ă** in **făt**, **â** in **câre**, **ä** in **färr**, **à** in **làst**, **ạ** in **fall**, **ą** in **sofą**, **au** in **author**; **e** in **can** **ē** in **mē**, **ĕ** in **mĕt**, **běrry**, **ę** in **veil**, **ē** in **tērm**; **ġ** in **ġem**, **g̃** in **g̃et**; **ī** in **fīne**, **ĭ** in **tĭn**, **ɪ** in **police**; **n̄** = **ng**, **N̄** = **ng** in its effect (nasal) on the preceding vowel, but is not itself sounded; **ō** in **nōte**, **ŏ** in **ŏbey**, **ŭ** in **nŭt**, **ǒ** in **sǒft**, **ô** in **fôr**, **ȯ** in **sȯn**, **ọ** in **wọlf**, **ọ** in **dọ**, **o͞o** in **sch o͞ol**, **o͝o** in **w o͝ol**; **s** = **z**; **t͟h** in **t͟hine**; **ū** in **tūne**, **ŭ** in **nŭt**, **û** in **bûrn**, **u͟** in **fu͟ll**, **u͟** in **ru͟de** (= **o͟**), **ua** = **wa**, **ue** = **we**; **x̱** = **gz**; **ȳ** in **mȳ**, **y̆** in **hy̆mn**. *Italic letters are silent.*

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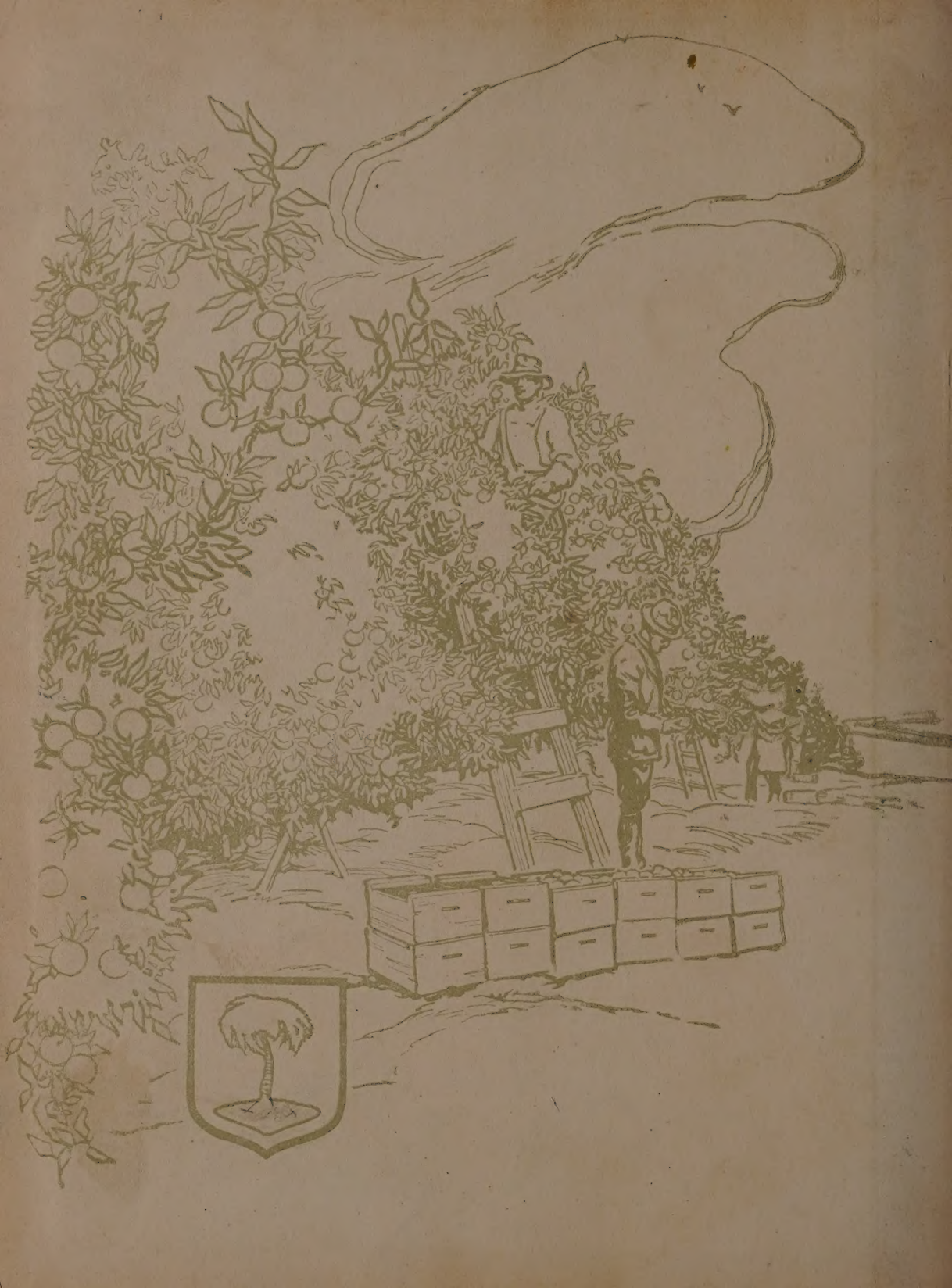

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